Serfojee Rajah 1827

NATURAL HISTORY,

2854

GENERAL AND PARTICULAR,

BY THE

COUNT DE BUFFON.

TRANSLATED INTO ENGLISH,

ILLUSTRATED

WITH ABOVE THREE HUNDRED COPPER-PLATES,

AND OCCASIONAL

NOTES AND OBSERVATIONS,

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NATURAL HISTORY.

THE ELEPHANT*.

IF the human ſpecies be excepted, the Elephant is the moſt reſpectable animal in the world. In ſize he ſurpaſſes all other terreſtrial creatures; and, by his intelligence, he makes as near

* The Elephant has a long cartilaginous trunk, formed of multitudes of rings, pliant in all directions, and terminated with a ſmall moveable hook. The noſtrils are at the end of the trunk, which is uſed, like a hand, to convey any thing into the mouth. This animal has no cutting teeth, but four large flat grinders in each jaw, and in the upper, two vaſt tuſks, pointing forwards, and bending a little upwards; the largeſt of them imported into Britain are ſeven feet long, and weigh 152 pounds each. The eyes are ſmall, and the ears long, broad and pendulous. The back is much arched. The legs are thick, and very clumſy and ſhapeleſs. The feet are undivided; but their margins are terminated by five round hoofs. The tail is like that of a hog. The colour of the ſkin is duſky, with a few ſcattered hairs on it; *Pennant's Synopſ.*

In Greek, Ελεφας; in Latin, *Elephantus, Barrus*; in Spaniſh, *Elephante*; in German, *Helphant*; in the Eaſt, *Elfil*. *Phil*, or *Fil*, is a Chaldean word which ſignifies *ivory*, and Munſter uſes it to denote the *Elephant*. In the Eaſt Indies the elephant was

near an approach to man as matter can approach ſpirit *. Of all animated beings, the elephant, the dog, the beaver, and the ape, have the moſt admirable inſtinct. But this inſtinct, which is only a reſult of all the animal powers, both internal and external, manifeſts itſelf by very different effects in each of theſe ſpecies. Naturally, and when left at full liberty, the dog is as cruel and bloody as the wolf; but amidſt all this ferocity of diſpoſition, there is one flexible point which we have cheriſhed. Hence the natural diſpoſitions of the dog differ not from thoſe of other rapacious animals, but by this point of ſenſibility, which renders him ſuſceptible of affection and attachment. It is from nature that he de-

was formerly called *Barre*; and it is probable that *Barrus* was derived from this word, and afterwards applied by the Latins to the elephant; *Geſner. cap. de Elephanto.* At Congo, it is called *Manzao* or *Manzo*; *Drake, p.* 104.

Elephas; *Plinii, lib.* viii. *cap.* 1. *Raii Synopſ. Quad. p.* 131. *Klein. Quad. p.* 36. *Ludolph. Æthiop. p.* 54. *Boullaye-le-Gouz. p.* 250. *Dellon's Voyage, p.* 71. *Leo Afric. p.* 336. *Kolben's Cape vol.* ii. *p.* 98. *Boſman's Hiſt. of Guiney, p.* 230. *Linſchottan. Iter. p.* 55. *Du Halde's China, vol.* ii. *p.* 224. *Addanſon's Voyage, p.* 138. *Moor's Travels, p.* 31. *Borri's Account of Cochin China, p.* 795. *Barbot's Guiney, p.* 141. 206. *Seba, tom.* i. *p.* 175. *tab.* 3. *Edwards, p.* 221.

L'Elephant; *Briſſon. Quad. p.* 28.

Elephas maximus; *Linn. Syſt. Nat. p.* 48.

* Valet ſenſu et reliqua ſagacitate ingenii excellit elephas; *Ariſt. Hiſt. Anim. lib.* ix. *cap.* 46.—Elephanti ſunt natura mites et manſueti, ut ad rationale animal proxime accedant; *Strabo.*—Vidi elephantos quoſdam qui prudentiores mihi videbantur quam quibuſdam in locis homines; *Vartomannus, apud Geſner. cap. de Elephanto.*

rives

rives this germ of ſentiment, which man has cultivated and expanded by living long and conſtantly in ſociety with this animal. The dog alone was worthy of this diſtinguiſhed regard; for, being more ſuſceptible of foreign impreſſions than any other quadruped, all his relative powers have been brought to perfection by his commerce with man. His ſenſibility, his docility, his courage, his talents, and even his manners, are modified and formed by the example and qualities of his maſter. We ought not, therefore, to aſcribe to him all the powers he appears to poſſeſs. His moſt brilliant qualities are borrowed from us. He has acquired more than other animals, becauſe he is more capable of making acquiſitions. Inſtead of having a repugnance to man, he has a natural bias in favour of the human race. This gentle ſentiment, which is always alive, is made evident by the deſire of pleaſing, and has produced docility, fidelity, perpetual ſubmiſſion, and, at the ſame time, that degree of attention which is neceſſary for acting accordingly, and for giving ready obedience to all the commands he receives.

The ape, on the contrary, is as untractable as he is extravagant. His nature, in every point, is equally ſtubborn. He has no relative ſenſibilities, no gratitude, no recollection of good treatment, or of benefits received. Averſe to the ſociety of man, and to every kind of reſtraint, he has a violent propenſity to do every thing that

is hurtful or displeasing. But these real faults are compensated by apparent perfections. In his external figure, he resembles man: He has arms, hands, and fingers. The use of these parts alone renders him superior in address to other animals; and the relations they give him to us, in similarity of movements and conformity of actions, please and deceive us, and lead us to ascribe to internal qualities, what depends solely on the structure of his members.

The beaver, whose individual qualities seem far inferior to those of the dog and ape, has, notwithstanding, received from Nature a gift almost equivalent to that of speech. He makes himself so well understood to his own species, that they unite in society, act in concert, undertake and execute large and long continued works; and this social attachment, as well as the result of their mutual intelligence, are more entitled to our admiration than the address of the ape, or the fidelity of the dog.

Hence the genius of the dog (if I may be permitted to profane this term) is borrowed; the ape has only the appearance of it; and the talents of the beaver extend no farther than to what regards himself and his associates. But the elephant is superior to all the three; for in him all their most exalted qualities are united. In the ape, the hand is the principal organ of address. The trunk of the elephant affords him the same means of address as the ape. It serves instead

inftead of an arm and a hand; and by it heis enabled to raife and lay hold of fmall as well as of large objects, to carry them to his mouth, to place them on his back, to embrace them faft, or to throw them at a diftance. He has, at the fame time, the docility of the dog, and, like that animal, he is fufceptible of gratitude, capable of attachment, is eafily accuftomed to man, fubmits lefs by force than good treatment, ferves him with zeal, fidelity, knowledge, &c. In fine, the elephant, like the beaver, loves the fociety of his equals, and can make himfelf to be underftood by them. They are often obferved to affemble together, to difperfe, and act in concert; and if they receive no mutual edification, if they carry on no common operation, it muft, perhaps, be afcribed to the want of room and of tranquillity; for men have been very anciently multiplied in all the countries inhabited by the elephant; he is, therefore, perpetually difturbed, and is no where a peaceable poffeffor of fufficient fpace to eftablifh a fecure abode. We have feen, that all thefe advantages are neceffary to unfold the talents of the beaver, and that, in every place frequented by men, he lofes his induftry, and receives no edification from affociating. Every being has its relative value in Nature. To form a juft eftimation of the elephant, he muft be allowed to poffefs the fagacity of the beaver, the addrefs of the ape, the fentiment of the dog, together with the peculiar advan-

tages of ſtrength, largeneſs, and long duration of life. Neither ſhould we overlook his arms, or tuſks, which enable him to transfix and conquer the lion. We ſhould alſo conſider that the earth ſhakes under his feet; that with his hand he tears up trees *; that by a puſh of his body, he makes a breach in a wall; that, though tremendous in ſtrength, he is rendered ſtill more invincible by his enormous maſs, and by the thickneſs of his ſkin; that he can carry on his back an armed tower filled with many warriors; that he works machines, and carries burdens which ſix horſes are unable to move; that to this pro-

* Veteres proboſcidem elephanti manum appellaverunt.— Eadem aliquoties nummum e terra tollentem vidi, et aliquando detrahentem arboris ramum, quem viri viginti-quatuor fune trahentes ad humum flectere non potueramus; cum ſolus elephas tribus vicibus motum detrahebat; *Vartomannus, apud Geſner. cap. de Elephanto.*—Silveſtres elephanti fagos, oleaſtros, et palmas dentibus ſubvertunt radicitus; *Oppian.*—Promuſcis elephanti naris eſt qua cibum, tam ſiccum quam humidum, ille capiat, orique perinde ac *manu* admoveat. Arbores etiam eadem complectendo evellit; denique ea non alio utitur modo niſi ut manu; *Ariſtot. de Partib. Animal. lib.* ii. *cap.* 16.—Habet præterea talem tantamque narem elephantus, ut ea manus vice utatur. . . . . Suo etiam rectori erigit atque offert, arbores quoque eadem proſternit, et quoties immerſus per aquam ingreditur, ea ipſa edita in ſublimi reflat atque reſpirat; *Ariſt. Hiſt. Anim. lib.* ii. *cap.* 1.—The ſtrength of the elephant is ſo amazing that it can only be known from experience. I have ſeen an elephant carry on his tuſks two cannons, fixed together with cables, each weighing three thouſand pounds, which he firſt raiſed from the ground, and then carried them to the diſtance of five hundred paces. I have alſo ſeen an elephant draw ſhips and gallies upon land, in order to ſet them afloat; *Voyages de Fr. Pyrard, tom.* ii. *p.* 356.

digious

digious ſtrength he adds courage, prudence, coolneſs, and punctual obedience; that he preſerves moderation even in his moſt violent paſſions; that he is conſtant and impetuous in love*; that, when in anger, he miſtakes not his friends; that he never attacks any but thoſe who offend him; that he remembers favours as long as injuries; that, having no appetite for fleſh, he feeds on vegetables alone, and is born an enemy to no living creature; and, in fine, that he is univerſally beloved, becauſe all animals reſpect, and none have any reaſon to fear him.

Men likewiſe, in all ages, have had a kind of veneration for this firſt and grandeſt of terreſtrial creatures. The ancients regarded him as a miracle of Nature; and, indeed, he is her higheſt effort. But they have greatly exaggerated his faculties. They have, without heſitation, aſcribed to him intellectual powers and moral virtues. Pliny, Ælian, Solinus, Plutarch, and other authors of a more modern date, have given to theſe animals rational manners, a natural and innate religion †, a kind of daily adoration of the

* Nec adulteria novere, nec ulla propter fœminas inter ſe prælia, cæteris animalibus pernicialia, non quia deſit illis amoris vis, &c.: *Plin. lib.* viii. *cap.* 5.—Mas quam impleverit coitu, eam amplius non tangit; *Ariſtot. Hiſt. Anim. lib.* ix. *cap.* 49.

† Hominum indigenarum linguam elephanti intelligunt; *Ælian. lib.* iv. *cap.* 24. . . . . Luna nova niteſcente, audio elephantos naturali quadam et ineffabili intelligentia e ſilva, ubi paſcuntur, ramos recens decerptos auferre, eoſque deinde in ſublime

the ſun and moon, the uſe of ablution before worſhip, a ſpirit of divination, piety towards heaven and their fellow-creatures, whom they aſſiſt at the approach of death, and after their deceaſe, bedew them with tears, cover them with earth, &c. The Indians, prejudiced with the notion of the metempſycoſis or tranſmigration of ſouls, are ſtill perſuaded, that a body ſo majeſtic as that of the elephant muſt be animated with the ſoul of a great man or a king. In Siam *, Laos,

ſublime tollere, ut ſuſpicere, et leviter ramos movere, tanquam ſupplicium quoddam Deæ protendentes, ut ipſis propria et benevola eſſe vellit; *Ælian. lib.* iv. *cap.* 10.—Elephas eſt animal proximum humanis ſenſibus. . . . . Quippe intellectus illis ſermonis patrii et imperiorum obedientia, officiorumque, quæ didicere, memoria, amoris et gloriæ voluptas: Imo vero, quæ etiam in homine rara, probitas, prudentia, æquitas, religio quoque ſiderum, ſoliſque ac lunæ veneratio. Autores ſunt, niteſcente luna nova, greges eorum deſcendere; ibique ſe purificantes ſolenniter aqua circumſpergi, atque, ita ſolutato ſidere, in ſilvas reverti. . . . Viſique ſunt feſſi ægritudine, herbas ſupini in cœlum jacentes, veluti tellure precibus allegata. *Plin. Hiſt. Nat. lib.* viii. *cap.* 1.—Se abluunt et purificant, dein adorant ſolem et lunam.——Cadavera ſui generis ſepeliunt.—Lamentant, ramos et pulverem injiciunt ſupra cadaver.——Sagittas extrahunt tanquam Chirurgi periti; *Plin. Ælian. Solin. Tzetzes*, &c.

* M. Conſtance conducted the ambaſſador to ſee the white elephant which is ſo eſteemed in India, and has given riſe to ſo many wars. He is very ſmall, and ſo old, that he is all wrinkled. Several mandarins are appointed to take care of him, and his victuals are ſerved up to him in large golden veſſels. His apartment is magnificent, and the inſide of it is handſomely gilded; *Premier Voyage du P. Tachard, p.* 239. In a country-houſe belonging to the king, ſituated upon the river about a league from Siam, I ſaw a ſmall white elephant,

Laos, Pegu *, &c. the white elephants are regarded as the living *manes* of the Indian Emperors. Each of theſe animals has a palace, a number of domeſtics, golden veſſels filled with the choiceſt food, magnificent garments, and they are abſolved from all labour and ſervitude. The emperor is the only perſonage before whom they bow the knee, and their ſalute is returned by the Monarch. By all theſe attentions,

phant, which was deſtined to be ſucceſſor to the one in the palace, which is ſaid to be three hundred years old. This little elephant is ſomewhat larger than an ox, and is attended by many mandarins; and, out of reſpect to him, his mother and aunt are kept along with him; *Idem, p.* 273.

* When the King of Pegu walks abroad, four white elephants, adorned with precious ſtones and ornaments of gold, march before him; *Recueil des Voyages de la Compagnie des Indes de Hollande, tom.* iii. *p.* 43. . . . When the King of Pegu gives audience, the four white elephants are preſented to him, who do him reverence by raiſing their trunks, opening their mouths, making three diſtinct cries, and then kneeling. When raiſed, they are led back to their ſtables, and there each of them are fed in large golden veſſels. They are twice a day waſhed with water taken from a ſilver veſſel. . . . During the time of their being dreſſed in this manner, they are under a canopy ſupported by eight domeſtics, in order to defend them from the heat of the ſun. In going to the veſſels which contain their food and water, they are preceded by three trumpets, and march with great majeſty, regulating their ſteps by muſic, &c.; *Idem, tom.* iii. *p.* 40.—White elephants are held to be ſacred by the natives of Pegu: Having learned that the King of Siam had two, they ſent ambaſſadors offering any price that ſhould be demanded for them. But the king of Siam would not ſell them. His Majeſty of Pegu, incenſed at this refuſal, came with his army, and not only carried off the elephants by force, but rendered the whole country tributary to him; *Idem, tom.* ii. *p.* 223.

honours, and marks of reſpect, they are flatter-ed, but not corrupted. This circumſtance alone ſhould be ſufficient to convince the Indians, that theſe animals are not endowed with human ſouls.

After removing the fabulous credulities of antiquity, and the puerile fictions of ſuperſtition, which ſtill exiſt, the elephant, even to philoſophers, poſſeſſes enough to make him be regarded as a being of the firſt diſtinction. He deſerves to be known, and to be ſtudied. We ſhall, therefore, endeavour to write his hiſtory with impartiality. We ſhall firſt conſider him in a ſtate of nature, when he is perfectly free and independent, and afterwards in a ſtate of ſervitude, when the will of his maſter is partly the motive of his actions.

In a wild ſtate, elephants are neither ſanguinary nor ferocious. Their diſpoſitions are gentle, and they make not a wrong uſe of their arms or their ſtrength; for they never exert them but in defending themſelves, or in protecting their companions. Their manners are ſocial; for they are ſeldom ſeen wandering alone. They generally march in troops, the oldeſt keeping foremoſt*, and the next in age bringing up the rear. The young and the feeble are placed in the middle. The mothers carry their young

* Elephanti gregat imſemper ingrediuntur; ducit agmen maximus natu, cogit ætate proximus. Amnes tranſituri minimos præmittunt, ne majorum inceſſu atterente alveum, creſcat gurgitis alitudo; *Plin. Hiſt. Nat. lib.* viii. *cap.* 5.

firmly

firmly embraced in their trunks. They obſerve not this order, except in perilous marches, when they want to paſture on cultivated fields. In the deſerts and foreſts, they travel with leſs precaution, but without ſeparating ſo far as to exceed the poſſibility of receiving aſſiſtance from one another. Some of them, however, occaſionally wander, or lag behind the troop; and it is theſe alone whom the hunters dare attack; for a little army is neceſſary to aſſail a whole troop *; and they are never vanquiſhed but at the expence of ſeveral lives. It is even dangerous to do them the ſmalleſt injury †; for they run ſtraight upon the offender,

* I ſtill tremble when I think of the danger to which we expoſed ourſelves in purſuing a wild elephant; for, though there were only ten or a dozen of us, the one half of which were not well armed, if we could have come up with him, we ſhould have been fooliſh enough to make the attack. We thought we might kill him by two or three ſhot. But I afterwards ſaw that this buſineſs requires two or three hundred men; *Voyage de Guinée, par Guillaume Boſman, p.* 436.

† Solent elephanti magno numero confertim incedere, et ſi quemdam obvium habuerint, vel devitant, vel illi cedunt; at ſi quemdam injuria afficere velit, proboſcide ſublatum in terram dejicet, pedibus deculcans donec mortuum reliquerit; *Leonis Africani Deſcript. Africæ, p.* 744.—The Negroes unanimouſly relate, that the elephants, when they meet any perſon in the woods, do him no harm, unleſs they are attacked; but that, when ſhot at, and not mortally wounded, they become extremely furious; *Voyage de Guinée, par Boſman, p.* 245.—The wild elephant is provoked to purſue a man, and is then caught in a pit-fall; *Journal du Voyage de Siam, par l'Abbée de Choiſy, p.* 242.—Thoſe who hurt or

der, and though the weight of their bodies be great, their ſteps are ſo long, that they eaſily overtake the moſt agile man. They then tranſfix him with their tuſks, or, laying hold of him with their trunk, throw him againſt a ſtone, and put an end to his exiſtence by trampling him under their feet. But it is when provoked only that they kill men in this manner, and never injure thoſe who do not diſturb them. But as they are extremely ſuſpicious and ſenſible of injuries, it is proper to avoid them; and the travellers who frequent the countries inhabited by elephants, kindle fires during the night, and beat drums to prevent their approach. When they have been once attacked by men, or have fallen into a ſnare, they are ſaid never to forget it, but take every opportunity of revenge. As their ſenſe of ſmelling is, perhaps, more perfect than that of any other animal, the ſmell of a man ſtrikes them at a great diſtance, and they can eaſily follow him by the ſcent. The ancients relate, that the elephants tear the graſs off the ground upon which the hunters had paſſed, and that they hand it about to each other for the purpoſe of receiving information concerning the paſſage and march of the enemy.

or inſult an elephant, ſhould be much on their guard; for theſe animals do not eaſily forget injuries, until they accompliſh their revenge; *Recueil des Voyages de la Compagnie des Indes de Hollande, tom.* i. *p.* 413.

Theſe

These animals love the banks of rivers *, deep valleys, and ſhady moiſt places. They cannot diſpenſe with water, which they trouble before they drink. They often fill their trunk with water, either to carry it to their mouth, or ſolely for refreſhing their noſe, and amuſing themſelves by throwing it back into the river, or beſprinkling it around. They cannot ſupport cold, and likewiſe ſuffer by extreme heat. To avoid the ardour of the ſun's rays, they retire into the moſt ſhady receſſes of the foreſts. They frequently take to the water: The enormous ſize of their bodies rather aids than retards their ſwimming; for they ſink not proportionably ſo deep as other animals; and the length of their trunk, which they hold up in the air, and through which they reſpire, removes from them all apprehenſions of being drowned.

Roots, herbs, leaves, and tender wood, are their common food. They likewiſe eat grains and fruits. But they diſdain fleſh and fiſh †. When one of them diſcovers a plentiful paſture, he calls to the others, and invites them to eat with him ‡. As they require a vaſt quantity of

* Elephanti naturæ proprium eſt roſcida loca et mollia amare et aquam deſiderare, ubi verſari maxime ſtudet; ita ut animal paluſtre nominari poſſit; *Ælian. lib.* iv. *cap.* 24.

† The moſt ſavage of theſe animals eat no fleſh, but live ſolely upon leaves, branches, and twigs of trees, which they break off with their trunk, and even browſe pretty ſtrong wood; *Voyage de Fr. Pyrard, tom.* ii. *p.* 367.

‡ Cum eis cætera pabula defecerint, radices effodiunt, quibus paſcuntur;

of forage, they often change their place of paſturing; and, when they come upon cultivated fields, they do incredible damage. Their bodies being of an enormous weight, they deſtroy ten times more with their feet than they uſe for food, which generally amounts to one hundred and fifty pounds of graſs a day; and, as they always go in troops, they lay a whole country waſte in a ſingle hour. For this reaſon, the Indians and Negroes uſe every artifice to prevent the approach of theſe animals, or to fright them away. They make great noiſes, and kindle large fires round their cultivated fields. But, notwithſtanding theſe precautions, the elephants ſometimes pay them a viſit, drive off the domeſtic cattle, put the men to flight, and, not unfrequently, overturn their limber habitations. It is difficult to ſcare them; and they are not ſuſceptible of fear. Nothing can ſurpriſe them, or ſtop their progreſs, but artificial fires *, or crackers, which the natives throw at them, and

paſcuntur; e quibus primus qui aliquam prædam repererit, regreditur ut et ſuos gregales advocet, et in prædæ communionem deducat; *Ælian. lib.* ix. *cap.* 56.

* When the elephant is enraged, nothing ſtops his career but artificial fires. When fighting, the ſame means are employed to diſengage them from the combat; *Relat. par Thevenot, tom.* iii. *p.* 133.——The Portugueſe know no other mode of defending themſelves againſt the elephant, but by throwing ſquibs or torches in his eyes; *Voyage de Feynes, p.* 89.—In the Mogul empire, elephants are made to combat with each other. They fight ſo obſtinately, that they can only be ſeparated by throwing artificial fires between them; *Voyage de Bernier, tom.* ii. *p.* 64.

the

the ſudden and repeated noiſe ſometimes induces them to turn back. It is not eaſy to make them ſeparate from each other; for they generally act in concert, whether they attack, march, or fly.

When the females come in ſeaſon, this attachment to ſociety yields to a ſtronger paſſion. The troop ſeparates into pairs, which love had previouſly formed. They unite from choice, ſteal off in queſt of retirement, and their march ſeems to be preceded by love, and followed by modeſty; for all their pleaſures are accompanied with the profoundeſt myſtery. They have never been detected in their amours. They anxiouſly avoid the preſence or inſpection of their neighbours; and know, perhaps, better than the human race, how to enjoy pleaſure in ſecret, and to be entirely occupied with a ſingle object. They ſearch for the deepeſt ſolitudes of the woods, that they may give full vent, without diſturbance or reſerve, to all the impulſes of Nature *, which are lively and durable, in proportion to the long interval of abſtinence. The female goes with young two years †: When impregnated, the male abſtains; and his ſeaſon of love returns

* Elephanti ſolitudines petunt coituri, et præcipue ſecus flumina; *Ariſt. Hiſt. Anim. lib.* v. *cap.* 1.——Pudore nunquam niſi in abdito coeunt; *Plin. lib.* viii. *cap.* 5.

† Mas coitum triennio interpoſito repetit. Quam gravidam reddidit, eandem præterea tangere nunquam patitur. Uterum biennio gerit; *Ariſt. Hiſt. Anim. lib.* v. *cap.* 14.—Elephantus biennio geſtatur, propter exuperantiam magnitudinis; *Idem, de Generat. Anim. lib.* iv. *cap.* 10.

but

but once in three years. The females produce only one young *, which, at the moment of birth, has teeth †, and is as large as a wild boar. There is no appearance, however, of the horns or tuſks. Soon after, they begin to ſhoot; and, at the age of ſix months, they are ſeveral inches long ‡. The animal is then larger than an ox, and the tuſks continue to grow and enlarge till the moſt advanced age, provided the creature enjoys health and liberty; for it is not to be imagined what changes may be introduced into the temperament and habits of the elephant by ſlavery and unnatural food. They are eaſily tamed, inſtructed, and rendered ſubmiſſive; and, as they are ſtronger and more intelligent than any other animal, their ſervice is more ready, more extenſive, and more uſeful. But the diſguſt ariſing from their ſituation is probably never eradicated: For, though they feel, from time to time, the moſt lively impreſſions of love, they neither intermix nor produce in a domeſtic ſtate. Their conſtrained paſſion degenerates into fury. Being unable to gratify themſelves without witneſſes, they fret, loſe patience, and, at laſt, their indignation becomes ſo violent, that the ſtrongeſt

* Quæ maxima inter animalia ſunt, ea ſingulos pariunt, ut elephas, camelus, equus; *Ariſt. de Generat. Anim. lib.* iv. *cap.* 4.

† Statim cum natus eſt elephantus dentes habet, quanquam grandes illos (dentes) non illico conſpicuos obtinet; *Ariſt. Hiſt. Anim. lib.* ii. *cap.* 5.

‡ Thomas Lopes, apud Geſnerum, cap. de Elephanto.

chains,

chains, and fetters of every kind, are neceſſary to repreſs their movements, and to allay their rage. Hence they differ from all other domeſtic animals, who are managed by men as if they had no will of their own. They are not of the number of thoſe born ſlaves, which we propagate, mutilate, or multiply, purely to anſwer our own purpoſes. Here the individual alone is a ſlave. The ſpecies remain independent, and uniformly refuſe to augment the ſtores of their tyrants. This circumſtance ſhows the elephant to be endowed with ſentiments ſuperior to the nature of common brutes. To feel the moſt ardent paſſion, and, at the ſame time, to deny the gratification of it, to experience all the fury of love, and not to tranſgreſs the laws of modeſty, are, perhaps, the higheſt efforts of human virtue; and yet, in theſe majeſtic animals, they are only common and uniform exertions. The indignation they feel, becauſe they cannot be gratified in ſecret, becomes ſtronger than the paſſion of love, ſuſpends and deſtroys the effects of it, and, at the ſame time, excites that fury, which, during theſe paroxyſms, renders them more dangerous than any wild animal.

We are inclined, were it poſſible, to doubt of this fact; but all naturaliſts, hiſtorians, and travellers, concur in aſſuring us, that the elephants never produce in a domeſtic ſtate *. The Prin-

ces

* It is remarkable, that the male never covers the female, though ſhe indicates the ſtrongeſt mark of deſire, in ſituations where

ces of India keep great numbers of elephants; and, after many fruitleſs attempts to multiply them like other domeſtic animals, they found it neceſſary to ſeparate the males from the females, in order to diminiſh the frequency of thoſe ineffectual ardours, which are always accompanied with fury. Hence there are no domeſtic elephants which have not formerly been wild; and the manner of taking, taming, and rendering them ſubmiſſive *, merits particular attention.

where they may be expoſed to the obſervation of men; *Voyage de Fr. Peyrard, p.* 357.——The elephants never couple but in ſecret, and produce only one at a birth; *Coſmographie du Levant, par Thevot, p.* 70.

* I went to ſee the grand hunting of the elephants, which was performed in the following manner: The King ſent a great number of women into the woods; and, when the report was brought that they had diſcovered a troop of elephants, he diſpatched thirty or forty thouſand men, who made a large circle round the place. They poſted themſelves in fours at the diſtance of twenty or twenty-five feet from each other, and at every ſtation they kindled a fire, which was raiſed about three feet above the ſurface of the earth. There was another circle compoſed of elephants trained to war, diſtant from one another about a hundred or a hundred and fifty paces; and, in ſuch places as the wild elephants might moſt eaſily eſcape, the war elephants were poſted cloſer. There were cannons in ſeveral places, which are diſcharged when the wild elephants attempt to force a paſſage; for they are terrified at fire. This circle is daily diminiſhed, and at laſt becomes ſo ſmall, that the fires are not above five or ſix paces diſtant. As the elephants hear a great noiſe all round them, they dare not fly, though it is not uncommon for ſome of them to make their eſcape; for I was told that ten of them got off in one day. When the hunters want to ſeize them, they are made to enter a place ſurrounded with ſtakes,

tion. In the midſt of the foreſt, and in the neighbourhood of places frequented by the elephants, a ſpot is choſen, and ſurrounded with ſtrong palliſades. The largeſt trees of the wood ſerve as the principal ſtakes, to which are fixed croſs bars that ſupport the other ſtakes. A large opening is left, through which the elephant may enter; and over this door there is a trap, or rather it receives a ſtrong bar, which is ſhut after the animal paſſes. To draw him into this encloſure, the hunters go in queſt of him: They carry along with them into the foreſt a tamed female in ſeaſon; and, when they imagine themſelves to be near enough to be heard, her governor makes her utter the cry of love. The wild male inſtantly replies, and haſtens to join her. She is then made to march towards the encloſure, repeating the cry from time to time. She arrives firſt; and the male, following her by the ſcent, enters by the ſame port. As ſoon as he perceives the hunters, and ſees himſelf ſurround-

ſtakes, where there are alſo ſome trees, between which a man can eaſily paſs. There is another circle of war elephants and ſoldiers, into which ſome men enter mounted on elephants, who are extremely dexterous in throwing ropes round the hind legs of theſe animals. When fixed in this mannner, the wild elephant is put between two tame elephants, and a third one is appointed to puſh him behind in ſuch a manner, as obliges him to go forward; and, when he grows miſchievous, the others give him blows with their trunks. He is then led off into captivity; and the others are ſeized in the ſame manner. I ſaw ten of them taken. The King was preſent, and gave every neceſſary order; *Relation de la l'Ambaſſade de Mr. Chevalier de Chaumont à la Cour du Roi de Siam, p.* 91.

ed, his ardour vanishes, and is changed into fury. Ropes and fetters are thrown round his legs and trunk. Two or three tamed elephants, conducted by men expert in that business, are brought to him, and they endeavour to fix him to one of these animals. In fine, by address, by force, by torture, and by caresses, he is tamed in a few days. I will not enter into a more particular detail, but content myself with quoting from those travellers who have been eye-witnesses of the hunting of elephants*, which

* At a quarter of a league from Luovo, there is a kind of large amphitheatre, of a rectangular figure, surrounded with high terrass walls, upon which the spectators are placed. Within these walls, there is a pallisade of strong posts fixed in the ground, behind which the hunters retire when pursued by the enraged elephants. A large opening is left on the side next the fields, and opposite to it, next the city, there is a smaller one, which leads to a narrow alley, through which an elephant can pass with difficulty, and this alley terminates in a large shade where the operation of taming is finished.

When the day destined for the chase arrives, the hunters enter the woods, mounted on female elephants trained to this exercise. The men cover themselves with leaves of trees, to prevent their being observed by the wild elephants. When they have advanced into the forests, and think that some elephants may be in the neighbourhood, they make the females utter certain cries, fitted to allure the males, who instantly reply by frightful roarings. Then the hunters, when they perceive the elephants at a proper distance, return, and lead the females gently back toward the amphitheatre above described. The wild elephants never fail to follow. The male, which we saw tamed, entered the inclosure spontaneously along with the females, and the passage was immediately shut. The females continued their march across the amphitheatre, and

which differs in different countries, and according to the strength and dexterity of the people who

and filed off one by one into the narrow alley at the other end. The wild elephant, who had followed them all along, stopt at the entrance of this defile. Every method was tried to make him enter. The females, who were now beyond the alley, were made to cry. Some Siamese irritated him, by clapping their hands, and crying *pat, pat.* Others teaze him with long poles armed with sharp points; and, when pursued, they slip through between the posts, and conceal themselves behind the pallisade, which the elephant cannot surmount. Lastly, after having pursued several hunters in vain, he singles out one, whom he sets upon with extreme fury. This man runs into the narrow alley, and the elephant follows him. But, he no sooner enters but he perceives himself to be in a snare; for the man escapes, and two portcullises, one before and another behind, are instantly let fall; so that, being unable either to advance or retreat, the animal makes the most astonishing efforts, and raises the most hideous cries. The hunters endeavour to sooth him by throwing pails of water on his body, by rubbing him with leaves, by pouring oil upon his ears, and by bringing to him tamed elephants, both male and female, who caress him with their trunks. They fix ropes, however, round his body, and hind legs, to enable them to drag him out, and they continue to throw water on his trunk and body, in order to refresh him. In fine, a tamed elephant, accustomed to instruct noviciates, is made to approach him. The former is mounted by a servant, who makes the animal advance and retire, to show the wild elephant that he has nothing to fear, and that he may go out. The port is then opened, and he follows his neighbour to the end of the alley. When there, two elephants are tied, one to each side of him, another marches before, leads him in the way they want him to go, while a third pushes him behind with its head, till they arrive at a kind of shade, where he is tied to a large post, which turns round like the capstan of a ship. There he is left till next day, to allow his rage to subside. But, while he frets around this post, a Bramin, one of those Indian priests who are ex-

who make war againſt them; for, inſtead of making, like the king of Siam, walls, terraſſes, pallifades,

tremely numerous in Siam, dreſſed in white, approaches the animal, mounted on an elephant, turns gently round him, and bedews him with a conſecrated water, which the prieſt carries in a golden veſſel. They believe that, by this ceremony, the elephant loſes his natural ferocity, and is rendered fit for the King's ſervice. Next day, he walks along with his enſlaved neighbours; and, at the end of fifteen days, he is completely tamed; *Premier Voyage du P. Tachard, p.* 298.

They had no ſooner alighted from their horſes, and mounted the elephants which were prepared for them, than the King appeared, accompanied with a great number of mandarins, riding on elephants of war. They all proceeded about a league into the wood, when they arrived at the place where the wild elephants were encloſed. This was a ſquare park, of three or four hundred geometrical paces, the ſides of which were fenced with large ſtakes; in which, however, conſiderable openings were left at certain diſtances. It contained fourteen large elephants. As ſoon as the royal train arrived, a circle was formed, conſiſting of a hundred war elephants, which were placed round the park to prevent the wild ones from forcing through the palliſades. We were ſtationed behind this fence, near the King. A dozen of the ſtrongeſt tame elephants were puſhed into the park, each of them being mounted by two men, furniſhed with large ropes and nooſes, the ends of which were fixed to the elephants they rode. They firſt ran againſt the elephant they wiſhed to ſeize, who, ſeeing himſelf purſued, endeavoured to force the barrier and make his eſcape. But the whole was blockaded by the war elephants, who puſhed him back; and, in his courſe, the hunters, mounted on the tame elephants, threw their nooſes ſo dexterouſly upon the ſpots where it behoved the animal to place his feet, that the whole were ſeized in the ſpace of an hour. Each elephant was then bound with ropes, and two tame ones placed on each ſide of him, by means of which he is tamed in fifteen days; *Idem, p.* 340.

A few days after, we had the pleaſure of being preſent at the hunting of elephants. The Siameſe are very dexterous at this ſpecies

palliſades, parks, and vaſt encloſures, the poor Negroes content themſelves with the moſt ſimple artifices.

ſpecies of hunting, which they have ſeveral modes of performing. The eaſieſt, and not the leaſt entertaining, is executed by means of female elephants. When a female is in ſeaſon, ſhe is conducted to the foreſt of Luovo. Her guide rides on her back, and covers himſelf with leaves, to prevent his being perceived by the wild elephants. The cries of the tame female, which ſhe never fails to ſet up upon a certain ſignal given by the guide, collect all the elephants within the reach of hearing, who ſoon follow her. The guide, taking advantage of their mutual cries, returns ſlowly towards Luovo with all his train, and enters an encloſure made of large ſtakes, about a quarter of a league from the city, and pretty near the foreſt. A great troop of elephants were, in this manner, brought together; but one of them only was large, and it was very difficult to ſeize and to tame him.—The guide who conducted the female, went out of the encloſure by a narrow paſſage in the form of an alley, and about the length of an elephant. Each end of this alley was provided with a portcullis, which was eaſily raiſed or let down. All the young elephants followed the female at different times. But a paſſage ſo narrow alarmed the large one, who always drew back. The female was made to return ſeveral times; he uniformly followed her to the port; but, as if he foreſaw his loſs of liberty, he would never paſs. Several Siameſe, who were in the park, then advanced and endeavoured to force him, by goading him with ſharp pointed poles. The elephant, being enraged by this treatment, purſued them with ſuch fury and quickneſs, that not one of them would have eſcaped, had they not nimbly retired behind the ſtakes of the palliſade, againſt which the ferocious creature broke its large tuſks three or four times. In the heat of the purſuit, one of thoſe who attacked him moſt briſkly, and who was moſt keenly purſued, run into the alley, which the elephant entered in order to kill him. But the animal no ſooner fell into the ſnare, than the Siameſe eſcaped by a ſmall paſſage, and the two portculliſes were inſtantly let down. The elephant ſtruggled much; but he found himſelf obliged to

artifices. They dig *, in the places where the elephants are ſuppoſed to paſs, ditches ſo deep, that after falling into them, there is no poſſibility of getting out.

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remain in his priſon. To appeaſe him they threw pailfulls of water on his body. Ropes, however, were put round his legs and neck. After being fatigued for ſome time, he was brought out by means of two tame elephants who drew him forward with ropes, while other two puſhed him behind, till he was fixed to a large poſt, round which he could only turn. In an hour after, he became ſo tractable, that a Siameſe mounted on his back; and next day he was let looſe, and conducted to the ſtables along with the others; *Second Voyage du P. Tachard, p.* 352.

* Though theſe animals be large and ſavage, great numbers of them are taken in Æthiopia by the following ſtratagem: In the thickeſt parts of the foreſt, where the elephants retire during the night, an encloſure is made of ſtakes, interlaced with large branches, in which a ſmall opening is left, which has a door lying flat on the ground. When the elephant enters, the hunters, from the top of a tree, draw up the door by means of a rope. They then deſcend and ſlay the animal with arrows. But if, by accident, they miſs their aim, and the creature eſcapes from the encloſure, he kills every man he meets; *L'Afrique de Marmol, tom.* i. *p.* 58.—There are different modes of hunting elephants. In ſome places, caltrops are ſpread on the ground, by means of which the animals fall into ditches, from whence, after being properly entangled, they are eaſily drawn out. In others, a tame female is led into a narrow defile, and allures the male to approach by her cries. When he arrives, the hunters ſhut him up by barriers, which they have in readineſs for the purpoſe; and though he finds the female on her back, he copulates with her, contrary to the practice of other quadrupeds. After this, he endeavours to retire. But, while he goes about in queſt of an outlet, the hunters, who are upon a wall, or ſome elevated ſituation, throw ropes and chains of different dimenſions, by which they ſo entangle his trunk and the reſt of his body, that they can approach him without danger; and, after

The elephant, when tamed, becomes the moſt gentle and moſt obedient of all domeſtic animals. He is ſo fond of his keeper, that he careſſes him, and anticipates his commands, by foreſeeing

ter taking ſome neceſſary precautions, they carry him off, accompanied with two tame elephants, to ſhew him a proper example, or to chaſtiſe him, if he rebels.——There are many other methods of hunting elephants; for every country has its own mode; *Relation d'un Voyage par Thevenot, tom.* iii. *p.* 131.—The inhabitants of Ceylon dig pretty deep ditches, which they cover with thin planks and ſtraw. During the night, the elephants having no ſuſpicion of the deceit, come upon the planks, and fall into the ditch, from which they are unable to eſcape, but would infallibly periſh by hunger, if victuals were not brought to him by ſlaves, to whom they gradually become accuſtomed, and at laſt are rendered ſo tame, that they are brought to Goa, and other adjacent countries, to gain their own livelihood and that of their maſters; *Divers Memoires touchant les Indes Orientales, premier diſcours, tom.* ii. *p.* 257. *Recueil des Voyages de la Compagnie des Indes, Amſt.* 1711.——As the Europeans give a high price for elephants teeth, the love of gain arms the Negroes perpetually againſt theſe animals. For this ſpecies of hunting they ſometimes aſſemble in great bodies, with their arrows and darts. But the moſt common and moſt ſucceſsful method is that of digging ditches in the woods, becauſe they are never deceived in diſtinguiſhing the track of the elephants.——There are two methods of taking theſe animals, either by digging ditches and covering them with the branches of trees, into which the creatures inadvertently fall, or by hunting them, which is performed in the following manner. In the iſland of Ceylon, where the elephants are very numerous, the hunters keep female elephants, which they call *alias.* As ſoon as they learn that there are wild elephants in any place, they repair thither, accompanied with two of theſe alias, which, whenever a male is diſcovered, they let looſe. The females come up on each ſide of him, and, keeping him in the middle, ſqueeze him ſo hard that he cannot eſcape; *Voyage d'Orient. du P. Philippe de la tres-ſainte Trinité, p.* 361.

every

every thing that will pleaſe him. He ſoon learns to comprehend ſigns, and even to underſtand the expreſſion of ſounds. He diſtinguiſhes the tones of command, of anger, or of approbation, and regulates his actions accordingly. He never miſtakes the voice of his maſter. He receives his orders with attention, executes them with prudence and eagerneſs, but without any degree of precipitation; for his movements are always meaſured, and his character ſeems to partake of the gravity of his maſs. He eaſily learns to bend his knees for the accommodation of thoſe who mount him. His friends he careſſes with his trunk, ſalutes with it ſuch people as are pointed out to him, uſes it for raiſing burdens, and aſſiſts in loading himſelf. He allows himſelf to be clothed, and ſeems to have a pleaſure in being covered with gilded harneſs and brilliant houſings. He is employed in drawing chariots*, ploughs,

* I was an eye-witneſs to the following facts. At Goa, there are always ſome elephants employed in the building of ſhips. I one day went to the ſide of the river, near which a large ſhip was building in the city of Goa, where there is a large area filled with beams for that purpoſe. Some men tie the ends of the heavieſt beams with a rope, which is handed to an elephant, who carries it to his mouth, and after twiſting it round his trunk, draws it, without any conductor, to the place where the ſhip is building, though it had only once been pointed out to him. He ſometimes drew beams ſo large, that more than twenty men would have been unable to move. But what ſurpriſed me ſtill more, when other beams obſtructed the road, he elevated the ends of his own beams, that they might run eaſily over thoſe which lay in his way. Could the moſt enlightened man do

ploughs, waggons, &c. He draws equally, and never turns reſtive, provided he is not inſulted with improper chaſtiſement, and the people who labour with him have the air of being pleaſed with the manner in which he employs his ſtrength. The man who conducts the animal generally rides on his neck, and uſes an iron rod *, hooked at the end, or a bodkin, with which he pricks the head or ſides of the ears, in order to puſh the creature forward, or to make him turn. But words are generally ſufficient †, eſpecially if the animal has had time to acquire a complete acquaintance with his conductor, and to put entire confidence in him. The attachment of the elephant becomes ſometimes ſo ſtrong, and his affection ſo warm and durable, that he has been known to die of ſorrow, when,

do more? *Voyage d'Orient. du P. Philippe de la trés-ſainte Trinité, p.* 367.

* The conductor rides on the elephant's neck, and uſes no bridle, reins, or any kind of ſtimulus, but only a large iron rod, ſharp and hooked at the end, with which he ſpurs on the animal, and likewiſe directs the way, by pricking his ears, muzzle, and other places that have moſt ſenſibility. This rod, which would kill any other animal, is hardly ſufficient to make an impreſſion on the ſkin of the elephant, or to keep him in ſubjection when irritated; *Voyage de Pietro della Valle, tom.* iv. *p.* 247.—Two ſervants, the one mounted on the neck, and the other on the crupper, manage the elephant, by means of a large iron hook; *Premier Voyage du P. Tachard, p.* 273.

† Non fræno aut habenis aut aliis vinculis regitur bellua, ſed inſidentis voci obſequitur; *Vartoman. apud Geſner. cap. de Elephanto.*

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in a paroxyſm of rage, he had killed his guide*.

Though the elephant produces but a ſingle young one in two or three years, the ſpecies is very numerous. The prolific powers of animals are proportioned to the ſhortneſs of their lives. In elephants the duration of life compenſates their ſterility; and, if it be true that they live two centuries, and can propagate till they are one hundred and twenty years old, each couple may produce forty in this period. Beſides, as they have nothing to fear from other animals, and are taken with much difficulty and hazard by men, the ſpecies is eaſily ſupported, and is generally diffuſed over all the ſouthern regions of Africa and Aſia. Elephants abound in Ceylon †,

* Quidam iracundia permotus cum ceſſorem ſuum occidiſſet, tam valde deſideravit, ut, pœnitudine et mœrore confectus, obierit; *Arrianus in Indicis.*

† In Ceylon there are many elephants, whoſe teeth bring much riches to the inhabitants; *Voyage de Fr. Peyrard, tom.* ii. *p.* 151.——There are vaſt numbers of elephants in India, moſt of which are brought from the iſland of Ceylon; *Voyage de la Boullaye-le-Gouz, p.* 250.—— At Deli, as well as other parts of India, there are different kinds of elephants; but thoſe brought from Ceylon are preferred to all the reſt; *Relation d'un Voyage, par Thevenot, tom.* iii. *p.* 131.——In the iſland of Ceylon there are many elephants, and they are more generous and noble than thoſe of other countries; *Voyage d'Orient. du P. Philippe, p.* 361. *Recueil des Voyages qui ont ſervi à l'Etabliſſement de la Compagnie des Indes de Holland. Les Voyages de Tavernier, tom.* iii. *p.* 237.

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in the Mogul empire*, in Bengal †, in Siam ‡, in Pegu ||, and in all the other territories of India. They are, perhaps, ſtill more numerous in all the ſouthern regions of Africa, except certain cantons which they have abandoned, becauſe they are totally occupied by men. Elephants are faithful to their country, and never change their climate; for though they can live in temperate regions, yet they appear not to have ever attempted to eſtabliſh themſelves, or even to travel into theſe climates. They were formerly unknown in Europe. Homer, though he mentions ivory §, ſeems not to have been acquainted with the animal by which that ſubſtance is produced. Alexander the Great was the firſt European who ever mounted an ele-

* Voyage de Fr. Bernier au Mogul, tom ii. p. 64.——Voyage de de Feynes à la Chine, p. 88.——Relation d'un Voyage, par Thevenot, tom. iii. p. 131.——Voyage d'Edward Terei, aux Indes Orientales, p. 15.

† The country of Bengal abounds in elephants; and it is from thence they are conveyed to the other parts of India; *Voyage de Fr. Peyrard, tom.* i. *p.* 353.

‡ M. de Conſtance informed me, that the King of Siam had twenty thouſand elephants in his dominions, without reckoning thoſe that are wild, and live in the woods and mountains, of which fifty, ſixty, and even eighty, are ſometimes taken at a ſingle hunting match; *Premier Voyage du P. Tachard, p.* 288.

|| Recueil des Voyages de la Compagnie des Indes.—Voyage de Vander Hagen, tom. iii. p. 40. &c.

§ Herodotus is the moſt ancient author who mentions ivory to have been a matter derived from elephants teeth; *Vid. Plin. Hiſt. Nat. lib.* viii. *cap.* 3.

phant.

phant*. Thofe which he took from Porus, he caufed to be brought to Greece; and they were, perhaps, the fame which Pyrrhus †, feveral years after, employed againft the Romans in the Tarentine war, and with which Curius came triumphant into Rome. Annibal afterwards tranfported elephants from Africa, made them pafs the Alps, and conducted them almoft to the gates of Rome.

The Indians, from a period beyond the records of hiftory, have employed elephants in war ‡. Among thefe undifciplined nations, the elephants formed their beft troop; and, as long as fteel weapons alone were employed, they generally decided the fate of battles. We learn from hiftory, however, that the Greeks and Romans were foon accuftomed to thefe monfters of war. They opened their ranks to let them pafs, and directed all their weapons, not againft the animals, but their conductors, who ufed all their efforts to turn and appeafe thofe which had

* Elephantes ex Europæis primus Alexander habuit, cum fubegiffet Porum; *Paufanias, in Atticis.*

† Manius Curius Dentatus, victo Pyrrho, primum in triumpho elephantum duxit; *Seneca de Brevitate Vitæ, cap.* 13.

‡ From time immemorial, the Kings of Ceylon, of Pegu, and of Aracan, have ufed elephants in wars. Naked fabres were tied to their trunks, and on their backs were fixed fmall wooden caftles, which contained five or fix men armed with javelins, and other weapons. They contribute greatly to diforder the enemy; but they are eafily terrified by the fight of fire; *Recueil des Voyages de la Compagnie des Indes, tom.* vii.—*Voyage de Schonten, p.* 32.

feparated

ſeparated from the reſt of the troop. Now that fire has become the element of war, and the chief inſtrument of death, elephants, which are terrified both at the noiſe and flame *, would be more dangerous than uſeful in our combats. The Indian Kings ſtill arm elephants in their wars; but this practice is deſigned more for ſhow than utility. One advantage, however, is derived from them. Like every other military order, they ſerve the purpoſe of enſlaving their equals, and are, accordingly, uſed in taming the wild elephants. The moſt powerful monarchs of India have not now above two hundred war elephants †. They keep many others for the purpoſes of labour, and for tranſporting their women in large cages covered with foliage. It is a very ſafe mode of riding; for the elephant never ſtumbles: But to be accuſtomed to his briſk and ſwinging movements, requires time and practice. The neck is the beſt ſeat; for there

* The elephants are afraid of fire; and, therefore, ſince the uſe of fire-arms, theſe animals are of no value in war. Some of thoſe brought from Ceylon are not ſo daſtardly; but it is only after being daily accuſtomed to the firing of guns, and to having crackers thrown among their feet; *Voyage de Fr. Bernier, tom.* ii. *p.* 65.

† Few people in India have elephants. Even their nobles have not many; and the great Mogul keeps not above five hundred for his houſhold, and for tranſporting his baggage and women, in wattled cages or baſkets. I have been aſſured, that he has not above two hundred war elephants, part of which are employed in carrying ſmall pieces of artillery; *Relation d'un Voyage, par Thevenot, tom.* iii. *p.* 132.

the ſucceſſions are not ſo hard as on the ſhoulders, back, or crupper. But for the purpoſes of war or of hunting, each elephant is always mounted by ſeveral men *. The conductor rides aſtraddle on their neck, and the hunters or combatants ſit on the other parts of the body.

In thoſe happy regions where cannon, and other murdering engines, are imperfectly known, they ſtill fight with elephants †. At Cochin, and other parts of Malabar ‡, horſes are not uſed, and all the warriors who fight not on foot are mounted on elephants. The practice is nearly the ſame in Tonquin §, Siam ||, and

* Of all animals, the elephant is the moſt ſerviceable in war; for he can eaſily carry four men armed with muſkets bows, or ſpears; *Recueil des Voyages de la Compagnie des Indes de Hollande*; *Second Voyage de Vander Hagen, tom.* ii. *p.* 53.

† When the elephants are led to war, they ſerve two purpoſes; for they either carry ſmall wooden towers, from the top of which ſome ſoldiers fight, or they have ſwords fixed to their trunks with iron chains, and in this manner they are let looſe againſt the enemy, whom they aſſail with courage, and would unqueſtionably cut to pieces, if they were not repelled by ſpears, which throw out fire; for, as elephants are terrified at fire, this artifice is employed to put them to flight; *Voyage d'Orient. par le P. Philippe, p.* 367.

‡ In Cochin, as well as in other parts of Malabar, no horſes are uſed in war. Thoſe who fight not on foot, are mounted on elephants, of which there are great numbers in the mountains; and theſe mountain elephants are the largeſt in India; *Relation d'un Voyage, par Thevenot, tom.* iii. *p.* 261.

§ In the kingdom of Tonquin, the women of rank generally ride upon elephants, ſo very tall and maſſy, that they can carry without any danger, a tower with ſix men in it, beſide the conductor on their neck; *Il Genio Vagante del Conte Aurelio degli Anzi, tom.* i. *p.* 282.

|| See Le Journal du Voyage de l'Abbé de Choiſy, p. 242.

Pegu,

Pegu, where the King and great Lords always ride upon elephants. At feſtivals, they are preceded and followed by a numerous train of theſe animals, pompouſly adorned with pieces of ſhining metal, and covered with rich ſtuffs. Their tuſks are ornamented with rings of gold and ſilver*; their ears and cheeks are painted; they are crowned with garlands; and a number of little bells are fixed to different parts of their body. They ſeem to delight in rich attire; for they are cheerful and careſſing in proportion to the number of their ornaments. But it is only in the ſouthern parts of India where the elephants have acquired this degree of poliſh. In Africa, it is with difficulty that they can be tamed †. The Aſiatics, who have been

* We have ſeen elephants whoſe teeth were extremely large and beautiful. In ſome, they are more than four feet long, and garniſhed with rings of gold, ſilver, and copper; *Premier Voyage du P. Tachard, p.* 273.—The grandeur of the princes conſiſts in the number of elephants they are able to keep, which is the chief ſource of their expence. The Great Mogul has ſeveral thouſands of them. The King of Madura, the Lords of Narzinga and of Biſnager, and the Kings of Naires and of Manſul, have ſeveral hundreds, which they diſtinguiſh into three claſſes. The largeſt are deſtined for the ſervice of the Prince. Their harneſs is extremely rich. They are covered with cloth embroidered with gold, and ſtudded with pearls. Their teeth are adorned with fine gold and ſilver, and ſometimes with diamonds. Thoſe of a middle ſize are employed in war; and the leaſt are uſed for common labour; *Voyage du P. Vincent Marie de Ste Catherine de Sienne, chap.* xi.

† The inhabitants of Congo have not the art of taming elephants, which are very miſchievous, take crocodiles with their trunks, and throw them to a great diſtance; *Il Genio Vag. del Conte Aurelio, tom.* ii. *p.* 473.

very anciently civilized, made the education of the elephant a kind of art, and have inftructed and modified him according to their own manners But, of all the African nations, the Carthaginians alone formerly trained the elephants to war; becaufe, at the fplendid period of their republic, they were perhaps the moft civilized people of the Eaft. There are now no wild elephants in all that part of Africa on this fide of Mount Atlas. There are even few beyond thefe mountains, till we arrive at the river Senegal. But they are numerous in Senegal*, in Guiney † in Congo ‡, on the Teeth coaft §, in the countries

* The elephants, of which I daily faw great numbers along the banks of the river Senegal, no longer aftonifh me. On the fifth day of November, I walked into the woods oppofite to the village of Dagana, where I found a number of their frefh tracks, which I followed near two leagues, and at laft difcovered five of thefe animals; three of them lay wallowing, like hogs, in their own foil, and the fourth was ftanding with its cub, eating the branches of an acacia tree, which they had broken off. By comparing the animal with the height of the tree, I perceived that its crupper was at leaft eleven or twelve feet high, and its tufks near three feet long. Though my prefence did not difturb them, I thought it proper to retire. In purfuing my route, I met with the impreffions of their feet, which meafured near a foot and a half in diameter. Their dung, which refembled that of a horfe, formed balls feven or eight inches in diameter; *Voyage au Senegal, par M. Adanfon, p.* 75. See alfo *Voyage de la Maire, p.* 97.

† Voyage de Guinée, par Bofman, p. 243.

‡ In the province of Pamba, which belongs to the kingdom of Congo, there are many elephants, on account of the number of rivers and forefts with which that country abounds; *Drake's Voyages.* See likewife, in the Dutch collection of Eaft India Voyages, *Le Voyage de Vander Broeck, tom.* ii. *p.* 319. and *Il Genio Vagante del Conte Aurelio, tom.* ii. *p.* 473.

§ The firft country where elephants are frequent is that part of

countries of Anta*, Acra, Benin, and all the other ſouthern territories of Africa †, as far as thoſe which are terminated by the Cape of Good Hope; except ſome well inhabited provinces, ſuch as Fida ‡, Ardra, &c. We even find

of the coaſt called by the Flemiſh *Tand-kuſt*, or *Teeth-coaſt*, on account of the number of elephants teeth, of which the natives make a lucrative traffic. Towards the gold coaſt, and in the countries of Awiné, Jaumoré, Eguira, Abocroé, Ancober, and Axim, many elephants are daily ſlain; and, the more any country is deſert and uninhabited, it is proportionally more frequented by elephants and other ſavage animals; *Voyage de Guinée, par Guil. Boſman, p.* 244.

* The country of Anta likewiſe abounds in elephants; for many of them are not only killed on the main land, but they daily come down to the ſea-coaſt, and under our forts, from which our people deſcry them, and make great ravages upon them. From Anta to Acra, very few are found, but in the places mentioned above, becauſe the countries between Anta and Acra have been a long time tolerably peopled, except that of Fetu, which, for five or ſix years, has been almoſt deſerted, and the elephants, for that reaſon, have taken it into their poſſeſſion. On the coaſt of Acra, vaſt numbers are annually ſlain; becauſe in theſe diſtricts there is much deſert and uninhabited land. . . . In the country of Benin, as well as on the Rio de Calbari, Camerones, and other adjacent rivers and countries, theſe animals are ſo numerous, that it is difficult to conceive how the natives can or dare live in them; *Idem, p.* 246.

† Below the Bay of St. Helen's, the country is divided into two portions by the Elephant river, which has received its name from the elephants, who love running waters, and are found in great numbers upon their banks; *Deſcription du Cap de Bonne Eſperance, par Kolbe, tom.* i. *p.* 114. *et tom.* iii *p.* 12.

‡ There are no elephants in Ardra, nor in Fida, though, in my time, one was killed there. But the Negroes affirm, that ſuch an event had not happened for ſixty years before. I, therefore, imagine that this animal had wandered thither from ſome other country: *Voyage de Guinée, par Boſman, p.* 245.

them in Abyſſinia *, in Æthiopia †, in Nigritia ‡, upon the eaſtern coaſts, and in all the interior parts of Africa. They likewiſe exiſt in the large iſlands of India and Africa, as Madagaſcar §, Java ‖, and as far as the Philippine iſlands **.

After comparing the teſtimonies of travellers and hiſtorians, it appears that elephants are more

* See Voyage Hiſtorique d'Abyſſinie du P. Lobo, tom. i. p. 57. where troops of elephants are ſaid to be found in Abyſſinia.

† The Æthiopians have elephants in their country; but they are ſmaller than thoſe of India; and, though their teeth are hollow, and of leſs value, they conſtitute a conſiderable article of trade; *Voyage de Paul Lucas, tom.* iii. *p.* 186.—There are many elephants in Æthiopia, and in the country of Preſter John, beyond the iſland of Moſambique, where the Caffres or Negroes kill a great number for the ſake of their teeth; *Recueil des Voyages de la Compagnie des Indes de Hollande, tom.* i. *p.* 413. See alſo *L'Afrique de Marmol, tom.* i. *p.* 58.

‡ Elephas magna copia in ſilvis Nigritarum regionis invenitur. Solent magno numero confertim incedere, &c.; *Leonis Afric. Deſcript. Africæ, tom.* ii. *p.* 774. *et* 745.

§ In the iſland of Madagaſcar, elephants are ſuppoſed to be more numerous than in any other country. Madagaſcar, and an adjacent iſland, called *Cuzibet*, furniſh ſuch vaſt quantities of ivory, that, in the opinion of merchants, the reſt of the world does not produce an equal number of elephants teeth; *Deſcript. de l' Inde Orient. par Marc Paul, p.* 114.

‖ The animals found in the iſland of Java, are, 1. elephants, which are tamed and hired out for labour; *Recueil des Voyages de la Compagnie des Indes de Hollande, tom.* i. *p.* 411.—At Tuban, the King's elephants are each placed under a particular ſhade ſupported by four pillars; and, in the middle of the area, which is likewiſe covered, there is a large ſtake, to which the elephant is fixed by a chain; *Idem, tom.* i. *p.* 526.

** Mandanar is the only Philippine iſland which produces elephants; and, as the natives do not tame theſe animals, as in Siam and Cambaya, they are prodigiouſly numerous; *Voyage autour du Monde, par Gemelli Careri, tom.* v. *p.* 209.

nume-

numerous and common in Africa than in Aſia. They are alſo leſs ſuſpicious, and retire not to ſuch diſtant ſolitudes. They ſeem to know the unſkilfulneſs and debility of the men who inhabit this part of the world; for they daily approach the villages, without diſcovering any apprehenſions*. They treat the Negroes with that natural and ſupercilious indifference which they entertain for all animals. They regard not man as a powerful or formidable being, but as a crafty creature, who knows only how to lay ſnares in their way, but who dares not attack them face to face, and is ignorant of the art of reducing them to ſlavery. It is by this art alone, which has been long known in the Eaſtern nations, that the number of theſe animals has been diminiſhed. The wild elephants, which theſe people render domeſtic, become by captivity ſo many voluntary eunuchs, in whom the ſources of generation are daily dried up. But, in Africa, where the elephants are all free, the ſpecies is ſupported, and might even increaſe, though more of them were deſtroyed; becauſe every individual is conſtantly labouring to repair the waſte. I perceive no other cauſe to which this difference of number can be aſcribed; for it appears, from every conſideration, that the

* The elephants often paſs the night in the villages, and are ſo little afraid of frequented places, that, inſtead of turning when they perceive the houſes of the Negroes, they march ſtraight forward, and overturn them like nut ſhells. *Voyage de la Maire, p.* 98.

ſouth of India and the Eaſt of Africa, are the countries moſt congenial to the nature of the elephant. He is there much larger and ſtronger than in Guiney, or any other weſtern region of Africa. He dreads exceſſive heat, and never inhabits the burning ſands of the deſert. Neither is the ſpecies ſo numerous in the country of the Negroes, as along the rivers; and they are never found in the mountainous parts of Africa. But, in India, the ſtrongeſt and moſt courageous of the ſpecies, and which have the largeſt tuſks, are called *Mountain Elephants*: They inhabit the elevated parts of the country, where, the air being more temperate, the waters leſs impure, and the food more wholeſome, they acquire all the perfections of which their nature is capable.

In general, the elephants of Aſia exceed, in ſize, ſtrength, &c. thoſe of Africa; and thoſe of Ceylon, in particular, are ſuperior to all thoſe of Aſia, not only in magnitude, but in courage and intelligence. Theſe qualities they perhaps derive from a more perfect education. However this may be, all travellers have celebrated the elephants of this iſland *, where the ſurface of

* The elephants of Ceylon are preferred to all others, becauſe they have moſt courage. . . . The Indians ſay, that all the other elephants reſpect thoſe of Ceylon; *Relation d'un Voyage par Thevenot*, *p*. 261.—The elephants of Ceylon are the boldeſt of the ſpecies; *Voyage de Bernier*, *tom*. ii. *p*. 65.—The beſt and moſt intelligent elephants come from the iſland of Ceylon; *Recueil*

of the earth is variegated with mountains, which are more elevated in proportion as they advance toward the centre of the iſland, and where the heat, though great, is not ſo exceſſive as in Senegal, Guiney, and the other weſtern parts of Africa. The ancients, who knew nothing of this quarter of the world, except the territories ſituated between Mount Atlas and the Mediterranean, had remarked, that the Lybian elephants were much ſmaller than thoſe of India *. There are now no elephants in that part of Africa; which proves what was alledged under the article *Lion* †, that men are at preſent more numerous there than they were in the days of the Carthaginians. The elephants have retired in proportion to the diſturbance they have met with from the human ſpecies. But, in travelling through the climates of Africa, they have not changed their nature; for the elephants of Senegal, Guiney, &c. are ſtill much ſmaller than thoſe of India.

The ſtrength of theſe animals is proportioned to their magnitude. The Indian elephants carry

cueil des Voyages, tom. i. *p.* 413.; *tom.* ii. *p.* 256.; *tom.* iv. *p.* 363. —In Ceylon the elephants are numerous, and more generous and noble than any others. . . . All other elephants revere thoſe of Ceylon, &c.; *Voyage d'Orient. du P. Philippe, p.* 130. *et* 367.

* Indicum (elephantum) Afri pavent, nec contueri audent; nam et major Indicis magnitudo eſt; *Plin. Hiſt. Nat. lib.* viii. *cap.* 9.

† See above, vol. v. p. 66.

with eaſe three or four thouſand weight *: The ſmaller, or thoſe of Africa, can eaſily raiſe with their trunk a weight of two hundred pounds, and place it on their own ſhoulders †. They draw up into their trunks large quantities of water, which they ſquirt into the air, or all around, to the diſtance of ſeveral fathoms. They can carry a weight of above a thouſand pounds on their tuſks. They uſe their trunks for breaking branches, and their tuſks for tearing up trees. The greatneſs of their ſtrength may be ſtill farther conceived from the quickneſs of their movements, compared with the magnitude of their bodies. At their ordinary ſtep, they cut as much ground as a horſe at a gentle trot; and they run as faſt as a horſe can gallop: But, in a ſtate of liberty, they never run, unleſs when enraged or terrified. Domeſtic elephants are generally walked, and they perform eaſily, and without fatigue, a journey of fifteen or twenty leagues in a day; and, when puſhed, they can travel thirty or forty leagues a day ‡. Their tread is heard at a great diſtance, and they may be eaſily followed by the tracks of their feet,

* Relation d'un Voyage par Thevenot, p. 261.

† The elephant raiſes with his trunk a weight of two hundred pounds, and places it on his own ſhoulders. . . . . He draws up into his trunk one hundred and fifty pounds of water, which he ſquirts to a conſiderable height in the air; *L'Afrique de Marmol, tom.* i. *p.* 58.

‡ When an elephant is puſhed, he can perform, in one day, as much as a man generally does in ſix; *L'Afrique de Marmol, tom.* i. *p.* 58.

which

which, in ſoft ground, meaſure fifteen or eighteen inches in diameter.

A domeſtic elephant performs more work than perhaps ſix horſes *; but he requires from his maſter much care, and a great deal of good victuals, which coſt about four francs, or a hundred pence a-day †. He is generally fed with rice, raw or boiled, and mixed with water. To keep him in full vigour, he is ſaid to require daily a hundred pounds of rice, beſides freſh herbage to cool him; for he is ſubject to be over-heated, and muſt be led to the water twice or thrice a-day for the benefit of bathing. He eaſily learns to bathe himſelf. He takes the water up in his trunk, carries it to his mouth, drinks part of it, and, by elevating his trunk, allows the remainder to run over every part of his body. To

* The price of elephants is very high. They are ſometimes ſold from a thouſand pagodas of gold to fifteen thouſand roupees, that is, from nine or ten thouſand livres to thirty thouſand; *Notes de M. de Buſſy*.—At Ceylon, an elephant is worth, at leaſt, eight thouſand *pardaons*; and, when very large, he brings twelve, and even fifteen thouſand pardaons; *Hiſt. de l'Iſle de Ceylon, par Ribeyro, p.* 144.

† The food of an elephant coſts about half a piſtole each day; *Relation d'un Voyage par Thevenot, p.* 261.——Tamed elephants are very delicate in their feeding. They require rice well boiled, and ſeaſoned with butter and ſugar, which is given to them in large balls. They devour daily a hundred pounds of rice, beſides leaves of trees, particularly thoſe of the Indian fig, called *bananas* or *plantane*, which are given them by way of refreſhment; *Voyage de Pyrard, tom.* ii. *p.* 367. See alſo, *Voyages de la Boullaye-le-Gouz, p.* 250.;—and *Recueil des Voyages de la Compagnie des Indes de Hollande, tom.* i. *p.* 473.

give an idea of the labour he performs, it is ſufficient to remark, that all the tuns, ſacks, and bales, tranſported from one place to another in India, are carried by elephants; that they carry burdens on their bodies, their necks, their tuſks, and even in their mouths, by giving them the end of a rope, which they hold faſt with their teeth; that, uniting ſagacity to ſtrength, they never break or injure any thing committed to their charge; that from the margins of the waters, they put theſe bundles into boats without wetting them, laying them down gently, and arranging them where they ought to be placed; that when diſpoſed in the places where their maſters direct, they try with their trunk whether the goods are properly ſtowed; and, if a tun or caſk rolls, they go, of their own accord, in queſt of ſtones to prop and render it firm.

When the elephant is properly managed, though in captivity, he lives a long time; and, it is probable, that, in a ſtate of liberty, his life is ſtill longer. Some authors affirm, that he lives four or five hundred years* others two or three hundred †, and others a hundred and twenty,

* Oneſimus, according to Strabo, *lib.* 15. ſays, that eleplants live five hundred years.—Philoſtratus, *Vit. Apoll. lib.* xvi. relates, that the elephant Ajax, which fought for Porus againſt Alexander the Great, lived four hundred years after that battle,——Juba, King of Mauritania, aſſerts, that an elephant was taken in Mount Atlas, which was known to have been in a battle four hundred years before.

† Elephantum alii annos ducentos vivere aiunt, alii trecentos;

twenty, a hundred and thirty, and a hundred and forty *. I believe that a medium between the two extremes is the truth; and that, if captive elephants live a hundred and twenty, or a hundred and thirty years, thoſe which are free, and enjoy all the conveniencies and rights of Nature, ought to exiſt at leaſt two hundred. Beſides, if they go two years with young, and require thirty before they obtain their full growth, we may, with ſtill more certainty, conclude, that their life extends beyond the period we have affixed. But captivity abridges their exiſtence leſs than the injuries ariſing from change of climate. Whatever care is beſtowed on him, the elephant lives not long in temperate, and ſtill ſhorter in cold countries. That which the King of Portugal ſent to Louis XIV.

centos; *Ariſt. Hiſt. Anim. lib.* viii. *cap.* 9.—Elephas ut longiſſimum annos circiter ducentos vivit; *Arrian. in Indicis.*—I ſaw a white elephant, which was deſtined to be the ſucceſſor of that in the palace, and was ſaid to be near three hundred years old; *Premier Voyage de Siam du P. Tachard, p.* 273.

* The elephants grow during one half of their exiſtence, and generally live a hundred and fifty years; *Drake's Voyage, p.* 104.—The female elephants go two years with young, and live a hundred and fifty years; *Recueil des Voyages de la Compagnie des Indes de Hollande, tom.* vii. *p.* 31.——Notwithſtanding all the inquiries I have made, I could never learn exactly how long the elephant lives. The keepers of theſe animals can give no other information, than that ſuch an elephant was in the poſſeſſion of their father, grandfather, and great-grandfather; and, by computing the length of time which theſe people lived, it is ſometimes found to amount to a hundred and twenty, or, a hundred and thirty years; *Voyage de Tavernier, tom.* iii. *p.* 242.

in 1668*, and which was then only four years old, died in the month of January 1681, at the age of ſeventeen, and lived at Verſailles only thirteen years, though he was fed plentifully, and managed with the greateſt attention. He had daily eighty pounds of bread, twelve pints of wine, and two pails of pottage, mixed with four or five pounds of bread; and every ſecond day, in place of pottage, he had two pails of boiled rice, without reckoning what was given him by viſitors. He had, beſides, a ſheaf of corn every day for his amuſement; for, after eating the ears, he made a kind of whip of the ſtraw, with which he drove away the flies. He delighted in breaking the ſtraw into ſmall morſels, which he did very dexterouſly with his trunk; and, as he was daily led out to walk, he pulled and eat the graſs. The elephant which was lately at Naples, though the heat is greater there than in France, lived but a few years. Thoſe which were ſent to Peterſburgh, though well ſheltered, clothed, and warmed with ſtoves, all died ſucceſſively. Hence we may conclude, that this animal is incapable of ſubſiſting, and far leſs can he multiply, in any part of Europe. But I am aſtoniſhed that the Portugueſe, who firſt knew the value and utility of elephants in the Eaſt Indies, did not tranſport them to the warm climate of Brazil, where, by leaving them at liberty, they would

* Mem. pour ſervir à l'Hiſtoire des Animaux, part. iii. p. 101 et 127.

probably

probably have multiplied. The elephants are generally aſh-coloured, or blackiſh. White elephants, as formerly remarked, are extremely rare *; and authors are quoted who have ſeen white and red elephants in different parts of India, where they are highly valued †. Beſides, theſ

* Some perſons who lived long in Pondicherry, ſeem to doubt the exiſtence of white and red elephants; for they affirm, that in this part of India, at leaſt, the elephants are all black. It is true, they remark, that, when theſe animals are long neglected to be waſhed, the duſt which adheres to their oily and naked ſkin gives them the appearance of a dirty gray colour; but when waſhed with water, they become as black as formerly. I believe that black is the natural colour of elephants, and none of any other colour are to be found in thoſe parts of India which theſe people have had an opportunity of ſeeing. But, at the ſame time, it ſeems not to admit of a doubt, that in Ceylon, Siam, Pegu, Cambaya, &c. ſome white and red elephants are accidentally to be met with. For ocular witneſſes of this fact, we might quote le Chevalier Chaumont, l'Abbé de Choiſy, le P. Tachard, Vander Hagen, Jooſt Schuten, Thevenot, Ogilvy, and other travellers of leſs note. Hortenfels, who has collected, in his *Elephantographia*, a great number of facts from different voyages, aſſures us, that the white elephant has not only a white ſkin, but that the hair of its tail is alſo white. To theſe teſtimonies, we might add the authority of the ancients. Ælian, lib. iii. cap 46. mentions a ſmall white elephant in India, and ſeems to inſinuate that the mother was black. This variety in the colour of elephants, though rare, is certain, and very ancient. It has, perhaps, proceeded from their domeſtic condition, to which the Indians have been long accuſtomed to reduce theſe animals.

† In the proceſſion of the King of Pegu, two red elephants are led before, harneſſed with ſilk and gold ſtuffs, which are followed by four white elephants, harneſſed in a ſimilar manner, with the addition of precious ſtones, and the tuſks covered with

theſe varieties are ſo uncommon, that, inſtead of conſidering them as diſtinct races, they ought to be regarded as qualities purely individual and accidental; for, if it were otherwiſe, we ſhould know the countries of white, red, and black elephants, in the ſame manner as we know the climates of white, red, and black men. 'In India,' ſays P. Vincent Marie, 'there are three 'kinds of elephants: The white, which are the 'largeſt, the moſt gentle, and peaceable, are 'adored as gods by ſeveral nations: The red, 'ſuch as thoſe of Ceylon, though the ſmalleſt in 'ſize, are the moſt valorous, the ſtrongeſt, and 'the beſt for the purpoſes of war; the other 'elephants, whether from natural inclination, or 'from recogniſing ſomething ſuperior, pay great 'reſpect to thoſe of Ceylon: The black is the 'third kind, and they are the moſt common, and 'in moſt eſtimation *.' This is the only author who ſeems to hint, that Ceylon is the peculiar climate of red elephants; for other travellers make no mention of ſuch a fact. He likewiſe aſſerts, that the Ceylon elephants are the ſmalleſt. Thevenot ſays the ſame thing in his voyage, p. 260. But other writers relate the reverſe. In fine, P. Vincent is the only author who ſays,

with rubies; *Voyage de la Compagnie des Indes de Hollande, tom.* iii. *p.* 60.

* *Voyage du P. Fr. Vincent Marie de St. Catherine de Sienne, chap.* 9. tranſlated from the Italian by M. le Marquis de Montmirail.

that

that the white elephants are the largeſt. P. Tachard, on the contrary, aſſures us, that the King of Siam's white elephant was diminutive, though very old. After comparing the teſtimonies of travellers with regard to the magnitude of elephants in different climates, it appears, that the ſmalleſt are thoſe of the weſt and north of Africa, and that the ancients, who knew only the northern part of Africa, were right in their general aſſertion, that the Indian elephants were much larger than thoſe of Africa. But, in the eaſtern regions of this quarter of the world, of which the ancients were ignorant, the elephants are as large, and perhaps larger, than thoſe of India. In this laſt region, it appears, that the elephants of Siam, Pegu, &c. are larger than thoſe of Ceylon; which, however, from the unanimous teſtimony of travellers, have more courage and intelligence.

Having thus marked the principal facts with regard to the ſpecies, let us next examine, in detail, the properties of the individual, his ſenſes, movements, ſize, ſtrength, addreſs, ſagacity, &c. In proportion to the magnitude of his body, the eyes of the elephant are very ſmall; but they are lively and brilliant: What diſtinguiſhes them from the eyes of all other animals, is a pathetic expreſſion of ſentiment, and an almoſt rational management of all their actions*. He turns them ſlowly and with mildneſs towards

* Elephantographia Chriſtophori Petri ab Hartenfels.

his maſter. When he ſpeaks, the animal regards him with an eye of friendſhip and attention, and his penetrating aſpect is conſpicuous when he wants to anticipate the inclination of his governour. He ſeems to reflect, to deliberate, to think, and never determines till he has ſeveral times examined, without paſſion or precipitation, the ſigns which he ought to obey. The dog, whoſe eyes are very expreſſive, is too prompt and vivacious to allow us to diſtinguiſh with eaſe the ſucceſſive ſhades of his ſenſations. But, as the elephant is naturally grave and moderate, we read in his eyes, whoſe movements are ſlow, the order and ſucceſſion of his internal affections *.

His ear is very good; and the external organ of hearing, like that of ſmelling, is more remarkable in the elephant than in any other animal. His ears are very large, and much longer, even in proportion to his body, than thoſe of the aſs. They lie flat on the head, like the human ears. They are commonly pendulous; but he can raiſe and move them with ſuch facility, that he uſes them to defend his eyes from duſt and flies †. He delights in the ſound of

* The eyes of the elephant are, proportionally, exceedingly ſmall; but they are very active and lively, and they uniformly move in ſuch a manner, as gives him the air of thought and reflection; *Voyage au Indes Orientales du P. Fr. Vincent Marie de St. Catherine de Sienne, p.* 376.

† The elephant has very large ears. . . He perpetually moves them with much gravity, and they defend his eyes from all kinds of inſects; *Id. Ibid.* . . . . . See alſo *Les Memoires pour ſervir à l'Hiſtoire des Animaux, part* iii. *p.* 107.

musical

musical instruments, and moves in cadence to the trumpet and tabor. His sense of smelling is exquisite, and he is passionately fond of perfumes of every kind, and especially of odoriferous flowers, which he gathers one by one, makes nosegays of them, and, after gratifying his nose, conveys them to his mouth. The flowers of the orange constitute one of his most delicious morsels. With his trunk he robs an orange tree of all its verdure, eating the fruit, the flowers, the leaves, and even the small branches*. In the meadows, he selects the most odoriferous plants; and, in the woods, he prefers the cocoa, the banana, the palm, and the sage trees; and, as these trees are soft and tender, he eats not only the leaves and fruit, but even the branches, the trunk, and the roots; for, when they are unable to pull up the trees with their trunk, they always succeed by using their tusks.

With regard to the sense of touching, it is chiefly confined to the trunk; but, in this member, it is as delicate and distinct as in the human hand. The trunk is composed of membranes, nerves, and muscles; it is both an organ of feeling and of motion. The animal can not only move and bend it, but he can contract, lengthen, and turn it on all sides. The extremity of the trunk terminates in a portube-

* Voyage de Guinée, par Bosman, p. 243.

rance * which ſtretches out on the upper ſide in the form of a finger, by means of which the elephant performs all that we do with our fingers. He lifts from the ground the ſmalleſt piece of money; he ſelects the herbs and flowers, and picks them up one by one; he unties the knots of ropes, opens and ſhuts gates, by turning the keys, or puſhing back the bolts. He learns to trace regular characters with an inſtrument as ſmall as a quil †. It cannot be denied that the elephant's hand has ſeveral advantages over ours. It is equally flexible, and as dexterous in touching or laying hold of objects. Theſe operations are performed by means of the appendix or finger, ſituated on the ſuperior part of the border, that ſurrounds the extremity of the trunk, in the middle of which there is a concavity in the form of a cup, and in the bottom of the cup are the apertures of the two common canals of ſmelling and of reſpiration. The elephant, therefore, has his noſe in his hand, and is enabled to combine the power of his lungs with the action of his fingers, and to attract

* Mem. pour ſervir a l'Hiſtoire des Animaux, part. iii. p. 108. & 140.

† Mutianus ter Conſul auctor eſt, aliquem ex his et litterarum ductus Græcarum didiciſſe, ſolitumque præſcribere ejus linguæ verbis: Ipſe ego hæc ſcripſi, &c.; *Plin. Hiſt. Nat. lib.* viii. *cap.* 3.——Ego vero ipſe elephantum in tabula litteras Latinas promuſcide atque ordine ſcribentem vidi: Verumtamen docentis manus ſubjiciebatur ad litterarum ductum et figuram eum inſtituens; dejectis autem et intentis oculis erat cum ſcriberet; doctos et litterarum gnaros animantium oculos eſſe dixiſſes; *Ælian. de Nat. Anim. lib.* ii. *cap.* 11.

fluids

fluids by a ſtrong ſuction, or to raiſe heavy bodies by applying to them the edge of his trunk, and making a vacuum within by a vigorous inſpiration.

Hence delicacy of feeling, acuteneſs of ſmelling, facility of movement, and the power of ſuction, are united at the extremity of the elephant's noſe. Of all the inſtruments which Nature has ſo liberally beſtowed on her moſt favourite productions, the trunk of the elephant is perhaps the moſt complete and the moſt admirable. It is not only an organic inſtrument, but a triple ſenſe, whoſe united functions are at once the cauſe, and produce the effects of that ſagacity and thoſe remarkable talents which diſtinguiſh the elephant, and exalt him above all other quadrupeds. He is not ſo ſubject, as other animals, to errors of viſion; becauſe he quickly rectifies them by the ſenſe of touching; and, by uſing his trunk, as a long arm, for the purpoſe of touching remote objects, he acquires, like man, clear ideas of diſtances. But the other animals, except the monkeys and ſome others who have a kind of arms and hands, cannot acquire ideas of diſtance but by traverſing ſpace with their bodies. Of all the ſenſes, that of touching has the greateſt relation to intelligence. The delicacy of touching, the flexibility of the trunk, the power of ſuction, the ſenſe of ſmelling, and the length of the arm, give the ideas of the ſubſtance of bodies, of their external form, of their weight,

of their ſalutary or noxious qualities, and of their diſtance. Thus, by the ſame members, and by one ſimultaneous act, the elephant feels, perceives, and judges of ſeveral things at one time. Now a multiplied ſenſation is equivalent, in ſome meaſure, to reflection: Though this animal, therefore, is, like all others, deprived of the faculty of reflecting, as his ſenſations are combined in the ſame organ, contemporary, and not ſeparated from each other, it is not ſurpriſing that he ſhould have ideas of his own, and readily acquire thoſe we wiſh to communicate to him. The memory of the elephant ſhould be more perfect than that of any other animal; for memory depends greatly on the circumſtances of actions. No ſolitary ſenſation, however lively, can leave any diſtinct or durable impreſſion; but ſeveral combined and contemporary ſenſations make deep and laſting impreſſions; ſo that, if the elephant cannot recollect an idea by touch alone, the adjacent and acceſſory ſenſations of ſmelling, and the power of ſuction, which have acted at the ſame time, aid him in recalling the remembrance of it. In man, the beſt mode of rendering the memory faithful, is to employ ſucceſſively all our ſenſes in examining an object; and it is owing to the neglect of habituating ourſelves to the combined uſe of our ſenſes, that we forget moſt things we ought to remember.

But,

But, though the elephant has more memory and intelligence than any other animal, his brain is proportionally ſmaller than that of moſt quadrupeds *. I mention this fact as a proof that the brain is not the ſeat of ſenſation, the *ſenſorium commune*, which, on the contrary, reſides in the nerves of the ſenſes, and in the membranes of the head. Thus the nerves diſtributed upon the trunk of the elephant, are ſo numerous as to be equivalent to all thoſe beſtowed on the reſt of the body. It is, therefore, by virtue of this ſingular combination of ſenſes and faculties in the trunk, that the elephant excels all other animals in ſagacity, notwithſtanding the enormity of his maſs, and the diſproportion of his form; for the elephant is, at the ſame time, a miracle of intelligence and a monſter of matter. The thickneſs and inflexibility of his body; the ſhortneſs and ſtiffneſs of his neck; the ſmallneſs and deformity of his head; the exceſſive largeneſs of his ears and noſe; the minuteneſs of his eyes, mouth, genitals, and tail; his ſtraight, clumſy, and almoſt inflexible limbs; the ſhortneſs and ſmallneſs of his feet †, which are hardly apparent; the thick-

* Mem. pour ſervir à l'Hiſt. des Animaux, part. iii. p. 135.

† The feet of every animal except the elephant are proportionally larger than thoſe of man.——The feet were ſo ſmall as to be hardly perceptible; becauſe the toes are covered with the ſkin of the legs, which hangs down on all ſides as far as the ground, and appears like the trunk of a tree cut acroſs; *Mem. pour ſervir à l'Hiſt. des Animaux, p.* 102.

neſs and calloſity of his ſkin: All theſe deformities are the more conſpicuous and diſagreeable to the eye, becauſe they are modelled on a large ſcale, and moſt of them peculiar to the elephant alone; for in no animal are the head, the feet, the noſe, the ears, and the tuſks, ſituated like thoſe of the elephant.

From this ſtrange conformation, the animal is ſubjected to ſeveral inconveniencies. He moves his head with difficulty, and cannot turn himſelf, in order to go back, without making a circuit. The hunters who attack him behind, or on the flanks, avoid the effects of his vengeance by circular movements; and they have time to renew their blows while he is turning himſelf againſt them. His legs, the rigidity of which is not ſo great as that of his neck and body, bend but ſlowly, and with difficulty. They are ſtrongly articulated to the thighs. His knee is like that of man*, and his foot is equally low; but the latter has no extent, ſpring, or force, and the former is hard and rigid. As long, however, as the elephant is young and in health, he bends his knees to lie down, and allows himſelf to be mounted, or charged with a load. But, when old or ſick, this movement becomes ſo laborious,

* His knee is ſituated, like that of man, in the middle between the belly and the foot; ſo that the elephant's leg is ſimilar to a man's, both with regard to the poſition of the knee and the ſmallneſs of the foot, the extent of which, from the heel to the toes, is very ſmall; *Mem. pour ſervir à l'Hiſt. des Animaux, part.* iii. *p.* 102.

that

that he chooſes rather to ſleep on his feet; and, if forced to lie down*, machines are neceſſary to raiſe him. His tuſks, which, with age, become enormouſly heavy, and not being placed, like the horns of other animals, in a vertical poſition, form two long levers, which, by their almoſt horizontal direction, fatigue the head prodigiouſly, and make it hang down; ſo that the animal is ſometimes obliged to make holes in the wall of his lodge to ſupport them, and relieve him of their weight †. He has the diſadvantage of having the organ of ſmelling very diſtant from that of taſting, and the inconvenience of not being able to ſeize any thing on the ground with his mouth, becauſe his neck is too ſtiff and too ſhort to allow his head to reach the earth. He is, therefore, obliged to lay hold of his food, and even of his drink, with his noſe, and then to convey it, not only to the entrance of his mouth, but as far as the throat; and, when the trunk is filled with water, he thruſts the end of

* We learned from the people who had the charge of the elephant at Verſailles, formerly mentioned, that, the firſt eight years he lived, he lay down and roſe with great facility; and that, during the laſt five years, he did not lie down to ſleep, but leaned againſt the wall of his apartment; ſo that, if he had happened to lie down when ſick, it would have been neceſſary to pierce the floor above, in order to raiſe him with engines; *Mem. pour ſervir à l'Hiſt. des Animaux, p.* 104.

† We ſaw where the elephant had employed his tuſks in making holes in a ſtone-pillar, which projected from the wall of his lodge, and theſe holes ſupported him when ſleeping, his tuſks being put into them: *Id. p.* 102.

it to the very root of the tongue*, ſeemingly with the intention of puſhing back the epiglottis to prevent the water which ruſhes out with impetuoſity, from entering into the larynx; for he forces out the water by the ſame air which he employed to ſuck it up, and it ruſhes out of the trunk with noiſe, and precipitantly enters the gullet. The tongue, the mouth, and the lips, are of no uſe to him, as in other animals, to ſuck or lap his drink.

From this deſcription, the ſingular conſequence reſults, that the young elephant muſt ſuck with its noſe, and afterwards convey the milk to its gullet. We are told, however, by the ancients, that he ſucks with his mouth, and not with his trunk †. But there is reaſon to believe that they never were witneſſes of the fact, and that they reaſoned ſolely from the analogy of other animals. If the young elephant ever acquired the habit of ſucking with his mouth, why ſhould he loſe it during the reſt of his life? Why does he never employ the mouth to ſuck in water? Why does he uniformly employ a double action, when a ſingle one would anſwer the purpoſe? Why does he never ſeize any object with his mouth, ex-

* Mem. pour ſervir à l'Hiſt. des Animaux, part. iii. p. 109.

† Pullus editus ore ſugit, non promuſcide, et ſtatim cum natus eſt cernit et ambulat; *Ariſt. Hiſt. Anim. lib.* vi. *cap.* 27.—Anniculo quidem vitulo æqualem pullum edit elephantus, qui ſtatim, ut natus eſt, ore ſugit; *Ælian. de Nat. Anim. lib.* vi. *cap.* 3.

cept

cept what is thrown into it when open*? It is, therefore, extremely probable, that the young elephant ſucks with his trunk only. This preſumption is not only proved by the following facts, but is founded on a ſtronger analogy than that which gave riſe to the opinion of the ancients. We formerly remarked, that, in general, animals, at the moment of birth, can perceive the preſence of the aliment they want by no other ſenſe but that of ſmelling. The ear can have no effect; neither can the eye; for moſt animals are blind when they begin to ſuck. The ſenſe of touching can only convey a vague and indiſcriminate notion of all the parts of the mother's body, or, rather, it can indicate nothing relative to appetite. But the ſenſe of ſmelling is alone ſufficient for this purpoſe: It is not only a ſpecies of taſte, but a fore-taſte, which precedes, accompanies, and determines the other kind. The elephant, therefore, like all other animals, perceives by this fore-taſte, the preſence of his aliment; and, as the ſeat of ſmelling is united with the power of ſuction, at the extremity of the trunk, he applies it to the teat, ſucks the milk, and conveys it to the mouth to ſatisfy his appetite. Beſides, the two paps, as in woman, are ſituated on the breaſts, and the teats being very ſmall in proportion to the ſize of the young

* Voyez les Memoires pour ſervir à l'Hiſt. des Animaux, part. iii. p. 109. et 119.

one's

one's mouth, whose neck also has little flexibility, the mother must have lain on her back or side to enable her young to lay hold of the teat with its mouth ; and, even in this situation, it would have been difficult to extract the milk, on account of the enormous disproportion between the largeness of the mouth and the smallness of the teat. But the margin of the trunk, which the animal contracts at pleasure, is easily accommodated to the teat, and enables the young elephant to suck the mother either when she stands or lies on her side. Thus every circumstance concurs in invalidating the notion of the ancients on this subject ; for none of them, nor even any of the moderns, alledge that they ever saw the elephant sucking ; and I have no hesitation in predicting, that, whenever such an observation is made, it will appear, that he sucks not with his mouth, but with his nose. I likewise imagine that the ancients are deceived, when they tell us, that the elephants copulate like other quadrupeds, the female only lowering her crupper*, for the more easy reception of the male. The situation of the part seems to render this mode of junction impossible. The female elephant has not, like other quadrupeds, the orifice of the vagina adjacent to the anus ; for it is situated nearly in the middle of the belly, about two and a half, or

* Subsidit fœmina, clunibusque submissis, et insistit pedibus ac innititur ; mas superveniens comprimit, atque ita munere venereo fungitur ; *Arist. Hist. Anim. lib.* v. *cap.* 2.

three feet diſtant from the anus*. On the other hand, the male organ is by no means proportioned to the magnitude of his body, nor to ſo long an interval, which, in the ſituation ſuppoſed, would preclude the practicability of his approach. Naturaliſts as well as travellers agree in affirming, that the male organ of the elephant exceeds not, either in length or diameter †, that of a horſe. It is therefore impoſſible that he ſhould attain his end in the ordinary poſition of quadrupeds. The female muſt neceſſarily lie on her back. De Feynes ‡ and Tavernier ‖ poſitively aſſert, and the ſituation of the parts confirms their evidence, that theſe animals cannot intermix in any other manner §. They require, therefore,

* Mem pour ſervir à l'Hiſt. des Animaux, part. iii. p. 132.

† Elephantus genitale equo ſimile habet, ſed parvum nec pro corporis magnitudine. Teſtes idem non foris conſpicuos ſed intus circa renes conditos habet; *Ariſt. Hiſt. Anim. lib.* ii. *cap.* 1. *L'Afrique d'Ogilby, p.* 13. *et* 14.

‡ When theſe animals couple, the female lies on her back; and, after the operation, the male raiſes the female with his trunk; *Voyage par Terre à la Chine du S. de Feynes, p.* 90.

‖ Though the elephants have no intercourſe in a domeſtic ſtate, yet they frequently come in ſeaſon. It is remarkable that the female, on theſe occaſions, collects all kinds of herbs and leaves, of which ſhe makes a bed elevated four or five feet above the ground, and, contrary to the nature of all other quadrupeds, lies down on her back, and ſolicits the male by her cries; *Voyage de Tavernier, tom.* iii. *p.* 240.

§ This article was written before I ſaw M. de Buſſy's Notes concerning the elephant; and his evidence fully confirms the fact, which the ſituation of the parts had ſuggeſted. 'The elephants,' ſays, M. de Buſſy, 'copulate in a ſingular manner. 'The

therefore, more time and conveniency for this operation than other quadrupeds; and it is, perhaps, for this reason, that they never copulate but when they enjoy full liberty, and have every necessary article at their command. ‡ The female must not only consent, but solicit the male by a position which she never assumes, unless when she thinks herself in perfect retirement *. May we not, therefore, conclude, that modesty is a physical virtue which exists in the brute creation? It is, at least, like softness, moderation, and temperance, a general and beautiful attribute of the female sex.

Thus the elephant neither sucks, generates, eats, nor drinks like other animals. The sound of his voice is likewise extremely singular. If we believe the ancients, the elephant utters two kinds of cries, one by the trunk, which, from its sinuosities and inflexions, is rough and long, like the sound of a trumpet; and another by the mouth, which is interrupted by short pauses and harsh sighs †. This fact, which was advanced by

‘ The female lies down on her back. The male rests on his fore ‘ legs, bends down those behind, and touches not the female ‘ any farther than is necessary to effect his purpose.’

* Pudore nunquam nisi inabdito coeunt; *Plin. Hist. Nat. lib.* viii. *cap.* 5.—The elephants couple very rarely; and, when they do, it is with such secrecy, and in places so solitary, that they have never been observed by any person. When in a domestic state, they never produce; *Voyage aux Indes Orientales du P. Vincent Marie de Sainte Catherine de Sienne, chap.* xi. *p.* 396.

† Elephantus citra nares ore ipso vocem edit spirabundam, quem-

by Ariſtotle, and afterwards repeated by naturaliſts and travellers, is probably falſe, or, at leaſt, not exactly related. M. de Buſſy denies that the elephant utters any cry through the trunk. However, as a man, by ſhutting his mouth cloſe, can make a ſound through his noſe, the elephant whoſe noſe is ſo large, may produce ſounds in the ſame manner. But, however this may be, the cry of the elephant is heard at the diſtance of more than a league, and yet it excites not terror like the roaring of the lion or tiger.

The elephant is ſtill more ſingular in the ſtructure of his feet, and the texture of his ſkin, which laſt is not, like other quadrupeds, covered with hair, but totally bare, as if it were ſhaven. There are only a few briſtles in the fiſſures of the ſkin, and theſe briſtles are thinly ſcattered over the body, but very numerous on the cilia and back of the head *, in the auditory paſſages, and the inſides of the thighs and legs. In the epidermis, or ſcarf ſkin, there are two kinds of wrinkles, the one raiſed and the other depreſſed, which give it the appearance of being cut into fiſſures, reſembling pretty nearly the bark of an old oak tree. In man, and the other animals,

quemadmodum cum homo ſimul et ſpiritum reddit et loquitur, at per nares ſimile tubarum raucitati ſonat; *Ariſt. Hiſt. Anim. lib.* iv. *cap.* 9.—Citra nares ore ipſo ſternutamento ſimilem edit ſonum; per nares autem tubarum raucitati; *Plin. Hiſt. Nat. lib.* viii.

* Memoires pour ſervir à l'Hiſtoire des Animaux, part. iii. p. 113.

the

the epidermis adheres throughout to the ſkin; but, in the elephant, it is only attached by ſome points of inſertion, like two pieces of cloth ſtitched together. This epidermis is naturally dry, and very ſubject to grow thick. It often acquires the thickneſs of three or four lines, by the ſucceſſive drying of different layers which are produced one above another. It is this thickening of the ſcarf ſkin which gives riſe to the *elephantiaſis* or *dry leproſy*, to which man, whoſe ſkin is naked like that of the elephant, is ſometimes ſubject. This diſeaſe is very common to the elephant; and the Indians, to prevent it, rub him frequently with oil, and bathe him with water, with a view to preſerve the ſkin clean and flexible. The ſkin, where it is not callous, is extremely ſenſible. In the fiſſures, and other places where it is neither dry nor hardened, the elephant feels the ſtinging of flies in ſuch a lively manner, that he not only employs his natural movements, but even the reſources of his intelligence, to get rid of them. He ſtrikes them with his tail, his ears, and his trunk. He contracts his ſkin, and cruſhes them between its wrinkles. He drives them off with branches of trees, or handfuls of long ſtraw. When all theſe artifices are unſucceſsful, he collects duſt with his trunk, and covers all the ſenſible parts of his ſkin with it. He has been obſerved pulveriſing himſelf in this manner ſeveral times in a day; and always at the moſt proper ſeaſon, namely,

after

after bathing *. The uſe of water is as neceſſary to theſe animals as air. When free, they never quit the banks of rivers, and often go into the water till it reaches their belly, and in this ſituation they daily ſpend ſeveral hours. In India, where the elephants are treated in the manner that beſt correſponds with their nature and temperament, they are carefully bathed, and allowed time and every poſſible conveniency for bathing themſelves †. Their ſkin is cleaned by

* I was informed that the elephant at Verſailles always rolled in the duſt after bathing, which he did as often as he was allowed; and it was obſerved that he threw duſt upon all the places which had been miſſed when he rolled himſelf, and that he drove of the flies with handfuls of ſtraw, or by throwing duſt with his trunk on the places where he felt himſelf ſtung, there being nothing which the flies avoid ſo much as falling duſt; *Mem. pour ſervir a l'Hiſt. des Animaux, part.* iii. *p.* 117.

† About eight or nine o'clock before noon, we went to the river to ſee the elephants belonging to the King and the nobles bathed. The animal goes into the water till it reaches his belly, and, lying down on one ſide, fills his trunk ſeveral times, and throws the water upon the parts which are uncovered. The maſter then rubs off, with a kind of pumice-ſtone, all the dirt that has been collected on the creature's ſkin. Some authors tell us, that, when the elephant lies down, he is unable to raiſe himſelf. But this aſſertion is not founded in truth; for the maſter, after rubbing on one ſide, deſires the animal to turn to the other, which he does very quickly; and after both ſides are well curried, he comes out of the river, and ſtands ſome time on the bank till he dries. The maſter then brings a pot of red or yellow paint, and draws lines on the elephant's face, round the eyes, and upon the breaſt and rump. He is next rubbed over with oil, to ſtrengthen his nerves; *Voyage de Tavernier, tom.* iii. *p.* 264.

rubbing

rubbing it with a pumice-ſtone; and then they are anointed with perfumed oils, and painted with various colours.

The ſtructure of the elephant's feet and legs ſtill differs from that of moſt other animals. The fore legs appear to be longer than the hind legs, and yet the former are ſomewhat ſhorter *. The hind legs are not bended in two places like thoſe of the horſe and ox, in whom the thigh-bone is almoſt totally concealed in the buttock, the knee is ſituated near the belly, and the bones of the foot are ſo high and ſo long, that they appear to conſtitute a great part of the leg. But the foot of the elephant is very ſhort, and reſts on the ground. His knee, like that of man, is placed near the middle of the leg. The ſhort foot of the elephant is divided into five toes, which are ſo covered with the ſkin as not to be viſible. We only ſee a kind of nails, the number of which varies, though that of the toes remains always the ſame. There are uniformly five toes on each foot, and commonly five nails †; but ſometimes there are only four ‡, or even three nails; and,

* Mem. pour ſervir à l'Hiſt. des Anim. part. iii. p. 102.

† The royal academy of ſciences recommended to me to examine whether all the elephants had nails on their feet. I never ſaw a ſingle elephant which had not five on each foot at the extremities of the five large toes. But the toes are ſo ſhort, that they hardly project from the foot; *Premier Voyage du P. Tachard, p.* 273.

‡ All thoſe who have written concerning the elephant, aſſign five nails to each foot; but, in our ſubject, there were only

and, in this caſe, they correſpond not exactly with the extremities of the toes. Beſides, this variety, which has only been remarked in young elephants brought to Europe, ſeems to be purely accidental, and probably depends on the manner the animal has been treated during the firſt years of its growth. The ſole of the foot is covered with a kind of leather as hard as horn, and projects outward all around. The nails conſiſt of the ſame ſubſtance.

The ears of the elephant are very long, moveable at pleaſure, and ſerve the animal as a fan. The tail is not longer than the ears, being generally from two and a half to three feet in length. It is thin, pointed, and garniſhed at the extremity with a tuft of thick hairs, or rather threads of a black, gloſſy, ſolid, horny ſubſtance. This hair or horn is as thick and ſtrong as iron-wire, and a man cannot break it by pulling with his hands, though it be flexible and elaſtic. In fine, this tuft of hair is greatly eſteemed as an ornament by the Negro women, who are probably attached to it by ſome ſuperſtition*. An elephant's tail

only three. The ſmall Indian elephant formerly mentioned had four nails both on the fore and hind feet. But there are uniformly five toes on each foot; *Mem. pour ſervir à l'Hiſt. des Animaux, part.* iii. *p.* 103.

* Merolla remarks, that many of the Pagans in theſe countries, and particularly the Saggas, have a devout regard for the elephant's tail. When any of their chiefs die, they preſerve, in honour of him, one of theſe tails, to which they pay a kind of religious worſhip, founded on the notion of its power.

tail is ſometimes ſold for two or three ſlaves; and the Negroes often hazard their lives in endeavouring to cut it off from the live animal. Beſide this tuft, the tail is covered, or, rather ſtrewed, through its whole extent, with briſtles as large and as hard as thoſe of the wild boar. Theſe briſtles are alſo found on the convex part of the trunk and the eye-brows, where they ſometimes exceed a foot in length. Briſtles or hairs on the eye-lids are peculiar to man, the monkey, and the elephant.

Climate, food, and ſituation, have a great influence on the growth and ſize of the elephant. In general, thoſe that are taken young, and reduced to captivity, never acquire their natural dimenſions. The largeſt elephants of India and the eaſtern parts of Africa are fourteen feet high; the ſmalleſt, which are found in Senegal, and other weſtern regions of Africa, exceed not ten or eleven feet; and thoſe which are brought to Europe when young, never arrive at this height. The Verſailles elephant, which came from Congo *, at the age of ſeven years, was not above ſeven and a half feet high. During the thirteen years that he lived, he acquired only one foot; ſo that, at the age of four, when he was tranſported, he was

power. They often go a hunting ſolely with a view to obtain a tail of this kind. But it muſt be cut off with a ſingle blow from the live animal, without which, ſuperſtition allows it no virtue; *Hiſt. Gen. des Voyages, par l'Abbé Prevoſt. tom.* v. *p.* 79.

* Mem. pour ſervir à l'Hiſt. des Animaux, part. iii. p. 101.

only

only ſix and a half feet in height; and, as the rate of growth always diminiſhes as animals advance in years, it cannot be ſuppoſed, that, if he had lived thirty years, the common period when the growth of elephants is completed, he would have acquired more than eight feet in height. Hence the domeſtic ſtate reduces the growth of the elephant one third, not only in height, but in all other dimenſions. The length of his body, from the eye to the origin of the tail, is nearly equal to his height at the withers. An Indian elephant, therefore, of fourteen feet high, is more than ſeven times larger and heavier than the Verſailles elephant. By comparing the growth of this animal to that of man, we ſhall find, that an infant, being commonly thirty-one inches high, that is, one half of its height, at the age of two years, and taking its full growth at twenty years, the elephant, which grows till thirty, ought to acquire the half of his height in three years. In the ſame manner, if we would form a judgment of the enormous maſs of the elephant, we ſhall find, that, the volume of a man's body being ſuppoſed to be two cubic feet and a half, the body of an elephant of fourteen feet long, three feet thick, and a proportional breadth, would be fifty times as large; and, conſequently, that an elephant ought to weigh as much as fifty men*.

'I ſaw,

* Peirère, in his life of Gaſſendi, ſays, that an elephant, which he cauſed to be weighed, was three thouſand five hundred pounds. This elephant ſeems to have been very ſmall; for,

'I ſaw,' ſays le P. Vincent Marie, 'ſome elephants which were fourteen and fifteen * feet high, with a proportional length and thickneſs. The male is always larger than the female. The price of theſe animals augments in proportion to their ſize, which is meaſured from the eye to the extremity of the back, and, after exceeding certain dimenſions, the price riſes like that of precious ſtones †.' 'The Guiney elephants,' Boſman remarks, 'are ten, twelve, or thirteen feet high ‡; and yet they are incomparably ſmaller than thoſe of the Eaſt Indies; for the hiſtorians of that country give more cubits to the height of the latter than the former has feet §.' 'I ſaw,' ſaid Edward Terry, 'elephants of thirteen feet in height, and many people affirmed, that they had ſeen elephants fifteen feet high ‖.'

From theſe, and many other authorities which might be enumerated, we may conclude, that the ordinary ſtature of the elephant is from ten to eleven feet; that thoſe of thirteen and fourteen are very rare; and that the ſmalleſt, when they

for, according to the calculation I have made in the text, the dimenſions of which I rather under-rated, he would have weighed at leaſt eight thouſand pounds.

* Theſe are probably Roman feet.

† Voyage aux Indes Orientales du P. Vincent Marie, chap. xi. p. 396.

‡ Theſe are probably Rheniſh feet.

§ Voyage en Guinée de Guillaume Boſman, p. 244.

‖ Voyage to the Eaſt-Indies by Edward Terry. *Note,* Theſe are perhaps Engliſh feet.

acquire

acquire their full growth in a ſtate of liberty, are about nine feet. Theſe enormous maſſes of matter fail not, however, as formerly remarked, to move with great quickneſs. They are ſupported by four members, which, inſtead of legs, reſemble maſſy columns of fifteen or eighteen inches diameter, and from five to ſix feet high. Theſe legs, therefore, are twice as long as thoſe of a man. Hence, though the elephant ſhould make but one ſtep, while a man makes two, it would outſtrip him in the chaſe. The ordinary walk of the elephant is not quicker than that of a horſe *; but, when puſhed, he aſſumes a kind of amble, which, in fleetneſs, is equivalent to a gallop. He performs with promptneſs, and even with freedom, all direct movements; but he wants facility in oblique or retrograde motions. It is generally in narrow and hollow places, where the elephant can hardly turn, that the Negroes attack him, and cut off his tail, which they value above all the reſt of the body. He has great difficulty in deſcending ſteep declivities, and is obliged to fold his hind legs †, that, in going down, the anterior part of his body may be on a level with the poſterior, and to prevent being precipitated by his own weight. He ſwims well, though the form of his legs and feet ſeem to indicate the contrary. But,

* Notes of M. de Buſſy, communicated by the Marquis de Montmirail.

† Notes of M. de Buſſy.

 as

as the capacity of his breaſt and belly is large, as the ſize of his lungs and inteſtines is enormous, and as all the great parts of his body are with air, or matters lighter than water, he ſinks not ſo deep as other animals. He has, therefore, leſs reſiſtance to overcome, and, conſequently, is enabled to ſwim more quickly with ſmaller efforts of his limbs. Of courſe, he is of great uſe in the paſſage of rivers. When employed on theſe occaſions *, beſide two pieces of cannon which admit three or four pound balls, he is loaded with great quantities of baggage, independent of a number of men fixed to his ears and his tail. When thus loaded, he enters the river, and ſwims ſo much below the water that no part of his body is ſeen except his trunk, which he raiſes in the air for the benefit of reſpiration.

Though the elephant generally feeds on herbs and tender wood, and though prodigious quantities of this aliment are neceſſary to afford a ſufficient number of organic particles to nouriſh ſo vaſt a body, he has not ſeveral ſtomachs, like moſt animals who live on the ſame ſubſtances. He has but one ſtomach, does not ruminate, is formed rather like the horſe, than the ox and other ruminating animals. The want of a paunch is ſupplied by the largeneſs and length of his inteſtines, and particularly of the colon, which is two or three feet in diameter, by fifteen or twenty in length. The ſtomach is much

* Notes of M. de Buſſy, [illegible]

ſmaller

ſmaller than the colon, being only three and a [illegible] or four feet long, and only one, or one and [illegible] alf in its largeſt diameter. To fill ſuch capacious [illegible]eſſels, it is neceſſary that the animal, wh[illegible] [illegible]iſhed with nouriſhment more ſubſtantial than h[illegible]rbage, ſhould eat almoſt perpetually. Wild elephants, accordingly, are almoſt continually employed tearing up trees, gathering leaves, and breaking young wood; and the domeſtic elephants, though ſupplied with great quantities of rice, fail not to collect herbs whenever they have an opportunity. However great the appetite of the elephant, he eats with moderation, and his taſte for cleanlineſs is ſuperior to the calls of hunger. His addreſs in ſeparating with his trunk the good leaves from the bad, and the care which he takes in ſhaking them till they are perfectly clear of inſects and ſand, afford great pleaſure to the ſpectator *. He is fond of wine, aquavitæ, arrack, &c. By ſhowing him a veſſel filled with any of theſe liquors, and promiſing him it as the reward of his labours, he is induced to exert the greateſt efforts, and to perform the moſt painful taſks. He ſeems to love the ſmoke of tobacco; but it ſtupifies and intoxicates him. He abhors all bad ſmells; and has ſuch a terror at the hog, that the cry of that animal makes him fly †.

* Notes of M. de Buſſy.

† The Verſailles elephant had ſuch a terror and averſion at ſwine, that the cry of a young hog made him fly to a great diſtance. This antipathy has been remarked by Ælian.

To

To complete the idea of the nature and intelligence of this ſingular animal, I ſhall [illegible] add ſome notes communicated to me [illegible] Marquis de Montmirail, preſident of [illegible]e royal academy of ſciences, who has bee[illegible] obliging, as not only to collect, but to tranſlate every thing regarding quadrupeds from ſome Italian and German books with which I am unacquainted. His zeal for the advancement of knowledge, his exquiſite diſcernment, and his extenſive knowledge in natural hiſtory, entitle him to the higheſt marks of diſtinction; and the reader will find how often I ſhall have occaſion to quote him in the ſubſequent parts of this work. ‘The elephant is uſed in dragging ‘artillery over mountains; and it is on ſuch ‘occaſions that his ſagacity is moſt conſpicuous. ‘When the oxen, yoked to a cannon, make an ‘effort to pull it up a declivity, the elephant ‘puſhes the breach with his front, and, at each ‘effort, he ſupports the carriage with his knee, ‘which he places againſt the wheel. He ſeems ‘to underſtand what is ſaid to him. When his ‘conductor wants him to execute any painful ‘labour, he explains the nature of the opera‘tion, and recites the reaſons which ought to ‘induce him to obey. If the elephant ſhows a ‘repugnance to what is exacted of him, the ‘*Cornack*, which is the name of the conductor, ‘promiſes to give him arrack, or ſome other ‘thing that he likes. But it is extremely dan‘gerous

‘ gerous to break any promise that is made to
‘ them: Many cornacks have fallen victims to in-
‘ discretions of this kind. On this subject, a fact,
‘ which happened at Decan, deserves to be re-
‘ lated, and though it has the appearance of in-
‘ credibility, it is, notwithstanding, perfectly true.
‘ An elephant out of revenge killed his cornack.
‘ The man's wife, who beheld the dreadful
‘ scene, took her two infants and threw them at
‘ the feet of the enraged animal, saying, *Since*
‘ *you have slain my husband, take my life also, as*
‘ *well as that of my children.* The elephant in-
‘ stantly stopped, relented, and, as if stung with
‘ remorse, took the eldest boy in its trunk,
‘ placed him on its neck, adopted him for its
‘ cornack, and would never allow any other
‘ person to mount it.

‘ If the elephant is vindictive, he is not un-
‘ grateful. A soldier at Pondicherry was accus-
‘ tomed to give a certain quantity of arrack to
‘ one of these animals every time he got his pay;
‘ and, having one day intoxicated himself, and,
‘ being pursued by the guard, who wanted to
‘ put him in prison, he took refuge under the
‘ elephant, and fell fast asleep. The guard in
‘ vain attempted to drag him from this asylum;
‘ for the elephant defended him with its trunk.
‘ Next day the soldier having recovered from
‘ his intoxication, was in dreadful apprehensions
‘ when he found himself under the belly of an
‘ animal so enormous. The elephant, which
‘ unquestion-

'unqueftionably perceived his terror, careffed 'him with its trunk.

'The elephant is fometimes feized with a 'kind of madnefs, which deprives him of all 'tractability, and renders him so formidable 'that it is often neceffary to kill him. The 'people try to bind him with large iron 'chains, in the hope of reclaiming him. 'But, when in his ordinary ftate, the moft a-'cute pains will not provoke him to hurt thofe 'who have never injured him. An elephant, 'rendered furious by the wounds it had re-'ceived at the battle of Hambour, ran about the 'field making the moft hideous cries. A foldier, 'notwithftanding the alarms of his comrades, 'was unable, perhaps on account of his wounds, 'to fly. The elephant approached, feemed a-'fraid of trampling him under his feet, took him 'up with its trunk, placed him gently on his 'fide, and continued its route.'

Thefe notes I have tranfcribed verbatim. They were communicated to the Marquis de Montmirail by M. de Buffy, who refided ten years in India, and performed many important fervices to the ftate. He had feveral elephants under his own charge, often rode upon them, and had daily opportunities of obferving many others, which belonged to his neighbours. Hence thefe notes, as well as all the others quoted under the name of M. de Buffy, merit every degree of credit. The members of the royal academy

academy of ſciences have alſo left us ſome facts ...n they learned from thoſe who had the ..na..ement of the elephant at Verſailles, and which ..ſerve a place in this work. 'The elephant ... ...ed to know when it was mocked 'by any per..n; and remembered the affront 'till an opportunity of revenge occurred. A man 'deceived it by pretending to throw ſome-'thing into his mouth: The animal gave him 'ſuch a blow with its trunk as knocked him 'down, and broke two of his ribs. After which, 'it trampled on him with its feet, broke one of 'his legs, and bending down on its knees, en-'deavoured to puſh its tuſks into his belly; but 'they luckily run into the ground on each ſide 'of his thigh, without doing him any injury. 'A painter wanted to draw the animal in an 'unuſual attitude, with its trunk elevated, and 'its mouth open. The painter's ſervant, to 'make it remain in this poſition, threw fruits 'into its mouth, but generally made only a 'faint of throwing them. The elephant was 'enraged, and as if it knew that the painter 'was the cauſe of this teazing impertinence, in-'ſtead of attacking the ſervant, it eyed the 'maſter, and ſquirted at him ſuch a quantity of 'water from its trunk as ſpoiled the paper on 'which he was drawing.

'This elephant generally made leſs uſe of its 'ſtrength than its addreſs. With great eaſe 'and coolneſs, it looſed the buckle of a large 'double

'double leathern ſtrap, with which its leg was 'fixed; and, as the domeſtics had wrapt 'buckle round with a ſmall cord, and tied many 'knots on it, the creature deliberately looſed 'the whole, without breaking either the cord 'or the ſtrap. One night, after diſengaging itſelf 'in this manner from its ſtrap, it broke up the 'door of its lodge with ſuch dexterity as not to 'waken the keeper. From thence it went into 'ſeveral courts of the menagery, forcing open 'doors, and throwing down the walls when the 'doors were too narrow to let it paſs. In this 'manner it got acceſs to the apartments of 'other animals, and ſo terrified them, that they 'fled into the moſt retired corners of the incloſure.'

In fine, that nothing may be omitted which can contribute to throw light upon the natural and acquired faculties of an animal ſo ſuperior to all others, we ſhall add ſome facts, extracted from the moſt reſpectable and unſuſpicious travellers.

'Even the wild elephant,' ſays le P. Vincent Marie, 'has his virtues. He is generous and 'temperate; and, when rendered domeſtic, he 'is eſteemed for gentleneſs and fidelity to his 'maſter, friendſhip to his governour, &c. If 'deſtined to the immediate ſervice of princes, 'he recogniſes his good fortune, and maintains 'a gravity of demeanour correſponding to the

'dignity

'dignity of his office. If, on the contrary, less 'honourable labours are assigned to him, he 'becomes melancholy, frets, and evidently disco-'vers that he is humbled and depressed. In 'war, during the first onset, he is fiery and 'impetuous. When surrounded with hunters, 'he is equally brave. But, after being van-'quished, he loses all courage. He fights with 'his tusks, and dreads nothing so much as to 'lose his trunk, which, from its consistence, is 'easily cut. . . . . I shall only add, that the 'elephant is mild, attacks no person without 'being injured, seems to love society, is parti-'cularly fond of children, whom he caresses, 'and appears to discern the innocence of their 'manners.'

'The elephant,' says Pyrard*, 'is an animal 'of so much knowledge and judgment, that, 'beside his infinite utility to man, he may be 'said to enjoy a certain portion of reason. When 'about to be ridden, he is so obedient and well 'trained, that he accommodates his behaviour 'to the quality of the person he serves. He 'bends down, and assists his master to mount 'with his trunk. . . . . He is so tractable, that 'he will perform any thing that is required of 'him, provided he be treated with gentleness. . . . 'He does every thing he is desired, caresses 'those who ride on him,' &c.

* Voyage de François Pyrard, tom. ii. p. 366.

'By giving elephants,' ſay the Dutch voyagers *, 'whatever is agreeable to them, they 'are ſoon rendered as tame and ſubmiſſive as 'men. They may be ſaid to be deprived of the 'uſe of language only. . . . . . They are proud 'and ambitious; but they are ſo grateful for benefits received, that as a mark of reſpect, they 'bow their heads in paſſing the houſes where 'they have been hoſpitably received. . . . They 'allow themſelves to be led and commanded by 'a child †; but they love to be praiſed and careſſed. They quickly feel an injury or an affront; and the guilty perſon ſhould be on his 'guard; for he may reckon himſelf happy if 'they content themſelves with ſquirting water 'upon him with their trunks, or ſimply throwing him into a mire.'

'The elephant,' P. Philippe remarks ‡, 'makes 'a near approach to the judgment and reaſoning 'of man. When compared with the apes, they 'appear to be ſtupid and brutal animals. The 'elephants are ſo extremely modeſt, that they 'will not copulate in the preſence of any perſon; and if, by accident, any man perceives 'this operation, they infallibly reſent it, &c. . . . 'Their ſalute is performed by bending the 'knees, and lowering the head; and, when their

* Voyage de la Compagnie des Indes de Hollande, tom. i. p. 413.

† Idem, tom. vii. p. 31.

‡ Voyage d'Orient du P. Philippe de la Très-Sainte-Trinité, p. 366.

'maſter

'master wants to mount them, they assist him 'with great dexterity. When a wild elephant is taken, the hunters tie his feet, and one accosts and salutes him, makes apologies for 'binding him, protests that no injury is meant, tells him, that, in his former condition, he often wanted food, but, that, henceforward, he 'shall be well treated, and that every promise 'shall be performed to him, &c. The hunter 'no sooner finishes this soothing harangue, than 'the elephant follows him like a tamed lamb. 'We must not, however, conclude from hence, 'that the elephant understands language, but 'only, that, having a very strong discerning 'faculty, he distinguishes esteem from contempt, 'friendship from hatred, and all the other emotions which men exhibit to him; and for this 'reason he is more easily tamed by arguments 'than by blows. . . . . . . With his trunk he 'throws stones very far, and very straight, and 'also uses it for pouring water on his body when 'bathing.'

'Of five elephants,' Tavernier remarks*, 'which the hunters had taken, three escaped, 'though ropes and chains were thrown round 'their bodies and limbs. The natives told us 'the following most astonishing story, if it could 'be credited. When an elephant, they said, 'has once been caught in a pitfall, and escapes 'from the snare, he becomes extemely diffi-

* Voyage de Tavernier, tom. iii. p. 238.

'dent,

' dent, breaks off a large branch with his trunk, ' and ſtrikes the ground every where before he ' ſets down his feet, in order to diſcover by ' ſound whether there are any concealed holes ' by which he may be entrapped a ſecond time. ' For this reaſon, the hunters who related this ' ſtory deſpaired of being able, without much ' difficulty, to retake the three elephants which ' had made their eſcape. . . . . . Each of the ' two elephants which had been ſeized were ' placed betwen two tame ones, and ſurrounded ' by ſix men with burning torches, who ſpoke ' to the animals, and, preſenting food to them, ' ſaid, in their language, *take this, and eat it.* ' The food conſiſted of ſmall bunches of hay, ' pieces of black ſugar, and boiled rice mixed ' with pepper. When the wild elephant re- ' fuſed to do what he was ordered, the men ' ordered the tame elephants to beat him, which ' they performed, the one ſtriking him on the ' front and head, and, if the captive animal at- ' tempted to defend himſelf, the other ſtruck ' him on the ſide; ſo that the poor creature knew ' not where he was, and ſoon found himſelf ob- ' liged to obey.'

' I have frequently remarked,' ſays Edward Terry *, ' that the elephant performs many ac- ' tions which ſeem to proceed more from rea- ' ſon than from inſtinct. He does every thing ' that his maſter commands: If he wants to ter-

* Voyage to the Eaſt Indies, by Edward Terry, p. 15.

' rify

'rify any person, he runs upon him with every 'appearance of fury, and, when he comes near, 'stops short, without doing him the smallest 'injury. When the master chooses to affront 'any man, he tells the elephant, who collects 'water and mud with his trunk, and squirts it 'upon the object pointed out to him. The 'trunk is composed of cartilage, hangs between 'the tusks, and is by some called his *hand*, be-'cause, on many occasions, it answers the same 'purposes as the human hand. . . . The Mogul 'keeps some elephants who serve as execution-'ers to criminals condemned to death. When 'the conductor orders one of these animals to 'dispatch the poor criminals quickly, he tears 'them to pieces in a moment with his feet. 'But, if desired to torment them slowly, he 'breaks their bones one after another, and 'makes them suffer a punishment as cruel as 'that of the wheel.'

We might quote many other facts equally curious and interesting. But we should soon exceed the limits we have prescribed to ourselves in this work. We should not even have given so long a detail, if the elephant had not been, in many respects, the chief animal in the brute creation, and who, of course, merited the greatest attention.

M. Daubenton has made several useful remarks on the nature and qualities of ivory, and has restored to the elephant those prodigious

tusks and bones which have been attributed to the mammouth. I acknowledge that I was long doubtful with regard to this point. I had often compared these enormous bones with the skeleton of nearly a full grown elephant preserved in the Royal Cabinet: And, as before composing their history, I could not persuade myself that there existed elephants six or seven times larger than the one whose skeleton I had so often examined, and, as the large bones had not the same proportions with the corresponding bones of the elephant, I believed, with the generality of naturalists, that these huge bones belonged to a much larger animal, the species of which had been lost or annihilated. But it is certain, from the facts formerly mentioned, that there are elephants fourteen feet high, and, consequently, (as the masses are as the cubes of the height,) six or seven times larger than that whose skeleton is in the Royal Cabinet, and which was not above seven, or seven and a half feet high. It is likewise certain, that age changes the proportions of bones, and that adult animals grow considerably thicker, though their stature does not increase. In fine, it is certain, from the testimonies of travellers, that there are elephants' tusks, each of which weighs more than a hundred and twenty pounds *. From all these facts, it is apparent,

* Mr. Eden informs us, that he measured several elephants' tusks, which he found to be nine feet long; that others were as

parent, that the prodigious bones and tuſks above taken notice of, are really the tuſks and bones of the elephant. Sir Hans Sloane* ſays the ſame thing; but brings no proof of the fact. M. Gmelin affirms it ſtill more poſitively †, and gives

as thick as a man's thigh; and that ſome of them weighed ninety pounds. It is ſaid, that, in Africa, ſome tuſks have been found, each of which weighed a hundred and twenty-five pounds. . . . . The Engliſh voyagers brought from Guiney the head of an elephant, which Mr. Eden ſaw in the poſſeſſion of Mr. Judde: It was ſo large, that the bones and cranium alone, without including the tuſks, weighed about two hundred pounds; from which it was computed, that the whole parts of the head, taken in their entire ſtate, would have weighed five hundred pounds; *Hiſt. Gen. des Voyages, tom.* i. *p.* 223.—Lopes amuſed himſelf in weighing ſeveral tuſks of the elephant, each of which amounted to about two hundred pounds; *Idem, tom.* v. *p.* 79.—The magnitude of elephants may be eſtimated by their tuſks, ſome of which have been found to weigh two hundred pounds; *Drake's Voyage, p.* 104. ——In the kingdom of Loango, I purchaſed two tuſks, which belonged to the ſame animal, and each of them weighed a hundred and twenty-ſix pounds; *Voyage de la Compagnie des Indes de Hollande, tom.* iv. *p.* 319.——At the Cape of Good Hope, the elephant's teeth are very large, and weigh from ſixty to a hundred pounds; *Deſcript. du Cap de Bonne-eſperance, par Kolbe, tom.* iii. *p.* 12.

* Hiſt. de l'Acad. des Sciences, année 1727, p. 1.

† In Siberia, there are prodigious quantities of bones found in different places under the ground. This part of Natural Hiſtory is both curious and important: I have therefore collected all the facts I could learn upon this ſubject. Peter the Great, who was a patron of naturaliſts, gave orders to his ſubjects, in the year 1722, that, wherever any bones of the mammouth were diſcovered, the other bones belonging to the animal ſhould be diligently ſought for, and the whole ſent to Peterſburg. Theſe orders were publiſhed in all the towns of Siberia,

gives ſome curious facts on the ſubject, which deſerve to be here related. But M. Daubenton appears

Siberia, and, among others, in Jakutzk, where, after this publication, a Sluſchewoi, called *Waſſilei Oltaſſow*, entered into a written obligation before Michaele Petrowitſch Iſmailow, captain-lieutenant of the guard, and Woywode of the place, to travel into the interior cantons of Lena, in order to ſearch for the bones of the mammouth; and he was diſpatched thither on the 23d of April the ſame year. The following year, another addreſſed the Chancery of Jakutzk, and repreſented, that he had travelled along with his ſon toward the ſea, in queſt of the bones of the mammouth, and that, oppoſite to Surjatoi Noſs, about two hundred verſts from that place and the ſea, he found, in a turfy ſoil, which is common in theſe diſtricts, the head of a mammouth, with one of the horns adhering to it; and in the neighbourhood there was another horn of the ſame animal, which had probably fallen off while the creature was alive; that, at a little diſtance, they drew out of the earth another head, with the horns, of an unknown animal; that this head reſembled that of an ox, only it had horns above its noſe; that, on account of an accident which befel his eyes, he was obliged to leave theſe heads where they were; and that, having heard of his Majeſty's orders, he now begged to be ſent off with his ſon toward Vſt-janſkoje, Simowie, and the ſea. His demand was complied with, and they were inſtantly diſpatched. A third Sluſchewoi of Jakutzk repreſented to the chancery, in 1724, that he made a voyage on the river Jelon; that he was happy enough to diſcover, in a ſteep bank of this river, a freſh head of the mammouth, with the horn and all its parts; that he drew it out of the earth, and left it where he could find it again; and that he begged to be ſent off with two men accuſtomed to ſuch reſearches. The woywode accordingly conſented. The Coſſack ſoon after ſet out on his journey, and found the head, and all its parts, except the horns; for there remained only the half of one horn, which he brought, along with the head, to the Chancery of Jakutzk. Some time after, he brought two horns of the mammouth, which he alſo found on the river Jelon.

The

appears to be the firſt who has put the matter beyond all doubt, by accurate menſurations, exact

The Coſſacks of Jakutzk were extremely happy to find, under the pretext of going in queſt of the bones of the mammouth, an opportunity of making ſuch agreeable voyages. They were furniſhed with five or ſix poſt horſes, when one would have been ſufficient, and they could employ the reſt in carrying various articles of merchandize. Such an advantage was a great encouragement to adventurers. . . . . . A Coſſack of Jakutzk, called *Jwanſelſku*, petitioned the Chancery to be ſent to the Simowies of Alaſeiſch and Kowymiſch, in queſt of theſe kind of bones, and of true cryſtal. He had already ſojourned in theſe places, had collected many curious objects, and actually ſent to Jakutzk ſome of theſe bones. Nothing ſeemed more important than this expedition; and the Coſſack was diſpatched on the 21ſt day of April 1725.

Naſar-Koleſchow, commiſſary of Indigirſk, in the year 1723, ſent to Jakutzk, and from that to Irkutzk, the bones of a ſingular head, which, according to my information was two arſchines, bating three wherſchok, in length, one arſchine high, and armed with two horns and a tuſk of the mammouth. This head arrived at Irkutzk on the 14th day of October 1723; and I found the hiſtory of it in the chancery of that town. I was alſo aſſured, that the ſame man afterwards ſent a horn of the mammouth.

Theſe facts, collected from different ſources, regard, in general, the ſame ſpecies of bones, namely, 1. All the bones in the Imperial cabinet of Peterſburg, under the name of *Mammouth bones, will be found, upon examination, to have a perfect reſemblance to thoſe of the elephant.* 2. From what has been above related, it appears, that there have been found in the earth, heads of an animal totally different from an elephant, and which, particularly in the figure of the horns, reſembled the head of an ox more than that of an elephant. Beſides, this animal could not be ſo large as an elephant; and I have ſeen a head of it at Jakutzk, which had been ſent from Anadirſkoi-Oſtrog, and was, according to my information, perfectly ſimilar to that found by Portn-jagin. I myſelf had one from Ilainſkoi-

exact compariſons, and reaſonings derived from
the

Ilainſkoi-Oſtrog, which I ſent to the Imperial cabinet at Peterſburg. In fine, I learned, that, on the banks of Niſchnaja-Tunguſka, ſimilar heads are not only found every where diſperſed, but likewiſe other bones which unqueſtionably belong not to the elephant, ſuch as ſhoulder bones, oſſa ſacra, oſſa innominata, hip-bones, and leg bones, which probably belonged to the ſame animal to which the above head ought to be attributed, and which ſhould by no means be excluded from the ox kind. I have ſeen leg and hip-bones of this ſpecies, concerning which I have nothing particular to remark, except that they appeared to be extremely ſhort in proportion to their thickneſs. Thus in Siberia, two kinds of bones are found in the earth, of which none were formerly eſteemed, but thoſe which perfectly reſembled the tusks of the elephant. But, after the imperial order, the whole began to be examined; and, as the firſt gave riſe to the fable of the mammouth, the laſt have alſo been indiſcriminately ranked under the ſame claſs. Neither muſt we believe, with Iſbrand-Ides, and the followers of his reveries, that it is only in the mountains which extend from the river Ket to the North-eaſt, and, conſequently, likewiſe in the environs of Mangaſca and Jakutzk, where the elephants bones are to be found: For they appear not only through all Siberia, not excepting its moſt ſouthern diſtricts, as in the ſuperior cantons of the Irtiſch, Toms, and Lena, but are diſperſed in different parts of Ruſſia, and even in many places of Germany, where they are called, with much propriety, by the name of *foſſil ivory*; for they have a perfect reſemblance to elephants' teeth, except that they are in a corrupted ſtate. In temperate climates, theſe teeth are ſoftened and converted into foſſil ivory; but in countries frequently frozen, they are generally found very freſh. From this circumſtance, the fable, that theſe and other bones are often found beſmeared with blood, might eaſily ariſe. This fable has been gravely related by Iſbrand-Ides, and, after him, by Muller, (Mœurs et Uſages des Oſtiaques, dans *le Recueil des Voyages au Nord*, *p.* 382.) who have been copied by others with equal confidence as if there had been no room for doubt: And as one fiction begets another, the blood pretended to be found on theſe bones has
produced

the extenſive knowledge he has acquired in the ſcience of comparative anatomy.

produced the notion, that the mammouth is an animal which lives in Siberia below the ground, where it ſometimes dies, and is buried under the rubbiſh. All this has been invented with the view to account for the blood pretended to be found on theſe bones. Muller gives a deſcription of the mammouth. This animal, ſays he, is four or five yards high, and about thirty feet long. His colour is grayiſh; his head is very long, and his front very broad. On each ſide, preciſely under the eyes, there are two horns, which he can move and croſs at pleaſure. In walking, he has the power of extending and contracting his body to a great degree. His paws, in thickneſs, reſemble thoſe of the bear. Iſbrandes-Ides is candid enough to acknowledge, that he never knew any perſon who had ſeen the mammouth alive. . . . . . . The heads and other bones, which correſpond with thoſe of the elephant, unqueſtionably once conſtituted real parts of that animal. To this abundance of elephants' bones we cannot refuſe our aſſent; and I preſume, that the elephants, to avoid deſtruction in the great revolutions which have happened in the earth, have been driven from their native country, and diſperſed themſelves wherever they could find ſafety. Their lot has been different. Some longer, and others ſhorter after their death, have been tranſported to great diſtances by ſome vaſt inundation. Thoſe, on the contrary, who ſurvived, and wandered far to the North, muſt neceſſarily have fallen victims to the rigours of the climate. Others, without reaching ſo great a diſtance, might be drowned, or periſh with fatigue. . . . . The largeneſs of theſe bones ought not to aſtoniſh us. The tuſks are ſometimes four arſchines long, and ſix inches in diameter, (M. de Strahlenberg ſays they have been ſeen nine inches in diameter,) and the largeſt weigh from ſix to ſeven puds. I mentioned, in another place, that freſh tuſks have been taken from the elephant, which were ten feet long, and weighed a hundred, a hundred and forty-ſix, a hundred and ſixty, and a hundred and ſixty-eight pounds. . . . . . There are pieces of foſſil ivory which are yellowiſh, or grow yellow in the

 courſe

SUPPLEMENT.

FROM comparing the male and female elephants, the former of which we ſaw in the year 1771, and the latter in 1773, it appears, that, in general, the parts of the female are groſſer and more fleſhy. Her ears, indeed, are proportionally ſmaller than thoſe of the male: But her body is more ſwollen, her head larger, and her members more rounded.

Like all other animals, the female elephant is more gentle than the male. Our female even careſſed people with whom ſhe was unacquainted. But the male is often formidable: The one we ſaw in 1771 was fiercer, leſs affectionate, and

courſe of time; others are brown like cocoa nuts, and more luſtrous; and others are of a blackiſh blue colour. The tuſks which have not been much affected with the froſt in the earth, and have remained ſome time expoſed to the air, are ſubject to become more or leſs yellow or brown, and aſſume other colours, according to the ſpecies of humidity with which the air is impregnated. M. de Strahlenberg alſo remarks, that pieces of theſe corrupted teeth are ſometimes of a bluiſh black colour. . . . . . For the intereſt of Natural Hiſtory, it were to be wiſhed, that, with regard to the other bones found in Siberia, we knew the animal to which they belong; but there is little hope of accompliſhing this purpoſe; *Relation d'un Voyage a Kamtſchatka, par M. Gmelin, imprime en 1735 a Peterſbourg, en Langue Ruſſe.* The tranſlation of this article was firſt communicated to me by M. de l'Iſle, of the Academy of Sciences, and afterwards by the Marquis de Montmirail.

more ungovernable than this female. In a ſtate of repoſe, the genitals of the male appear not externally.: His belly ſeems to be perfectly ſmooth; and it is only at the time of diſcharging urine, that the extremity of the penis comes out of the ſheath. This male elephant, though equally young with the female, was, as formerly remarked, more difficult to manage. He endeavoured to lay hold of people who approached too near, and often tore their clothes. Even his governors were obliged to act with caution; but the female obeyed with complacence and alacrity. The only time ſhe exhibited marks of diſpleaſure was when her keepers forced her into a covered waggon, in order to be carried from one town to another. When they wanted her to enter, ſhe refuſed to advance, and they could only accompliſh their purpoſe by pricking her behind. Irritated by this ill treatment, and being unable to turn herſelf in her priſon, ſhe had no other method of revenge but to fill her trunk with water, and throw it in torrents upon thoſe who had teazed her.

I remarked, in the hiſtory of the elephant *, that theſe animals probably did not copulate in the manner of other quadrupeds; becauſe the poſition of the organs in both ſexes ſeemed to require that the female, in order to receive the male, ſhould lie on her back. This conjecture, which appeared to be plauſible, is not true; for

* See above, p. 59.

the

the following teſtimony of M. Marcel Bles, an eye-witneſs, deſerves full credit.

'Having perceived that the Count de Buffon, 'in his excellent work, is deceived with regard 'to the copulation of the elephants, I know, that, 'in ſeveral parts of Aſia and Africa, theſe ani-'mals, eſpecially during the ſeaſon of love, re-'main always in the moſt inacceſſible places of 'the foreſts; but, in the iſland of Ceylon, where 'I lived twelve years, the land being every where 'inhabited, they cannot ſo eaſily conceal them-'ſelves; and, having often examined them, I 'perceived that the female organ is ſituated near-'ly under the middle of the belly, which would 'lead us to think, with M. de Buffon, that the 'males cannot cover the females in the manner 'of other quadrupeds. However, there is only 'a ſlight difference of ſituation. When they in-'clined to copulate, I perceived that the female 'bowed down her head and neck, and leaned 'her two fore legs, which were alſo bended, up-'on the root of a tree, as if ſhe meant to pro-'ſtrate herſelf on the ground; and the two hind 'legs remained erect, which gave the male an 'opportunity of embracing her as other quadru-'peds do. I can likewiſe affirm, that the fe-'males go with young about nine months. 'Moreover, the elephants never copulate, unleſs 'when in a ſtate of freedom. In the ſeaſon of 'love, the males are ſtrongly chained for four 'or five weeks, during which time, they diſ-

'charge

Plate CLXVI.

A. Bell Sculpt.

ELEPHANT.

'charge vaſt quantities of ſemen, and are ſo furious, that their cornacks or governours cannot come near them without danger. The approach of the rutting ſeaſon is eaſily known; for ſome days before it happens, an oily liquor flows from a ſmall hole on each ſide of the head. The domeſtic female, on theſe occaſions, ſometimes makes her eſcape, and joins the wild males in the woods. Some days afterward, her cornack goes in queſt of her, and calls her by her name till ſhe comes. She ſubmits to him with complacence, and allows herſelf to be conducted home, and ſhut up in the ſtable. It was from caſes of this kind that it was diſcovered that the females bring forth about the end of nine months.'

The firſt remark with regard to the mode of copulating, ſeems to be unqueſtionable, ſince M. Marcel Bles aſſures us, that he has ſeen the elephants perform the operation. But, as to the time of geſtation, which he limits to nine months, we ought to ſuſpend our judgment, becauſe all travellers affirm, that the female elephant is believed to go with young no leſs than two years.

THE RHINOCEROS*.

NEXT to the elephant, the Rhinoceros is the ſtrongeſt quadruped. He is at leaſt twelve feet long, from the extremity of the muzzle

* The rhinoceros has one large horn, ſometimes two, placed near the end of the noſe; it is ſometimes three feet and a half long, black, and ſmooth. The upper lip is long, hangs over the lower, ends in a point, is very pliable, and ſerves to collect its food, and deliver it into the mouth. The noſtrils are placed tranſverſely. The ears are large, erect, and pointed. The eyes are ſmall and dull. The ſkin is naked, rough, or tuberculated, and lies about the neck in vaſt folds. There is another fold from the ſhoulders to the fore legs, and another from the hind part of the back to the thighs. The ſkin is ſo thick and ſo ſtrong as to turn the edge of a ſcimitar and reſiſt a muſket ball. The tail is ſlender, flatted at the end, and covered on the ſides with very ſtiff, thick, black hairs. The belly hangs low. The legs are ſhort, ſtrong, and thick. The hoofs are divided into three parts, each pointing forward; *Pennant's Synopſ. of Quad. p.* 75.

Though the name of this animal be entirely Greek, it was unknown to the ancient Greeks. Ariſtotle takes no notice of it. Strabo is the firſt Greek, and Pliny the firſt Roman author who mentions it. The rhinoceros probably did not frequent that part of India into which Alexander had penetrated, though he met with great numbers of elephants; for it was about three hundred years after Alexander, that Pompey firſt brought this animal to Europe.

Rhinocerote in Italian; *Abada* in Portugueſe; *Linſcot, Navig. in Orient. pars* ii. *p.* 44. *Abada* in India and Java; *Bontius Ind. Orient. p.* 50. *P. Philippe, p.* 371. *Purchas's Pilgrim, vol.* ii. *p.* 1001. 1773. *Borri Hiſt. Cochin-china, p.* 797. *Du Haldes's China,*

muzzle to the origin of the tail, and the circumference of his body is nearly equal to his length *.

In

China, *vol.* i. *p.* 120. *Faunul. Sinenʃ.* *Chiengtuenden* and *Elkerkedon* in Perſia; *Pietro della Valle, tom.* iv. *p.* 245. *Chardin, tom.* iii. *p.* 45. *Arou hariſi,* according to Thevenot; *Relation de Divers Voyages, p.* 10.

Rhinoceros; *Plin. lib.* viii. *c.* 20. *Geſner. Quad. p.* 842. *Raii Synopſ. p.* 122. *Klein. Quad. p.* 26. *Grew's Muſ. p.* 29. *Worm. Muſ. p.* 336. *Briſſon. Quad. p.* 78. *Phil. Tranſ. Abrid. vol.* ix. *p.* 93. *Kolben, vol.* ii. *p.* 101.

Rhinoceros unicornis; *Linn. Syſt. Nat. p.* 104. *Edwards's Gleanings of Natural Hiſt. p.* 221.

Rhinoceros, a ρις et κερας. *Naricornis* Catelani. It is called *Noemba* in Java; *Tuabba, Nabba,* at the Cape of Good Hope; *Nozorozec, Zebati,* in Poland; and *Gomala* in India.

* I have in my poſſeſſion a figure of a rhinoceros, drawn by an officer of the Shafteſbury Eaſt India veſſel in the year 1737. The figure correſponds very well with mine. The animal died in the paſſage from the Eaſt Indies to Britain. This Officer had written the following note at the bottom of the figure. 'His back was about ſeven feet high. His colour 'reſembled that of a hog, whoſe ſkin is beginning to dry 'after wallowing in the mire. He had three hoofs on each 'foot. The folds of his ſkin lay backward on each other. Be'tween theſe folds were harboured inſects, millepeds, ſcorpions, 'ſmall ſerpents, &c. He was not above three years old when 'his figure was drawn. His penis, when extended, ſpread 'out in the form of a flower de luce.' In a corner of the plate I have given a figure of the penis. As this figure was communicated to me by Dr. Tyſon, I had not an opportunity of conſulting the author, whether theſe noxious inſects, which he ſays take up their abode in the folds of the animal's ſkin, were ſeen by himſelf, or whether he only related what had been told him by the Indians. I acknowledge that the fact appears very ſingular; *Edwards's Gleanings, p.* 25. *Note,* This laſt fact is not only doubtful, but that of the animal's age, compared with his largeneſs, appears to be falſe. We ſaw a rhinoceros

of,

In magnitude, therefore, he makes a near approach to the elephant; and he appears to be much lefs, only becaufe his legs are proportionally ſhorter than thofe of the elephant. But he differs ſtill more from the elephant in his natural powers and intelligence; for Nature has beſtowed on him nothing that elevates him above the ordinary rank of quadrupeds. He is deprived of all fenſibility in his ſkin; neither has he hands to enable him to improve by the fenfe of touching; and inſtead of a trunk, he has only a moveable lip, to which all his means of dexterity or addrefs are limited. His chief fources of fuperiority over other animals confiſts in his ſtrength, his magnitude, and the offenſive weapon on his nofe, which is entirely peculiar to him. This weapon is a very hard horn, folid throughout its whole extent, and ſituated more advantageouſly than the horns of ruminating animals, which defend only the fuperior parts of the head and neck. But the horn of the rhinoceros preferves from infult the muzzle, the mouth, and the face. For this reafon, the tiger will rather attack the elephant, whofe trunk he lays hold of, than the rhinoceros, whom he dare not face, without running the riſk of having his bowels torn out; for

of, at leaſt, eight years of age, which exceeded not five feet in height. Mr. Parfons faw one of two years, which was not higher than a heifer, which may be computed at about four feet. How, then, could the rhinoceros above taken notice of be only three years old, if it was feven feet high?

the

the body and limbs of the rhinoceros are covered with a ſkin ſo impenetrable, that he fears neither the claws of the tiger or lion, nor the ſword or ſhot of the hunter. His ſkin is blackiſh, being of the ſame colour, but thicker and harder than that of the elephant, and is not ſenſible to the ſtings of flies. He can neither extend nor contract his ſkin, which is rolled up into large folds at the neck, the ſhoulders, and the crupper, in order to facilitate the motion of his head and limbs, which laſt are maſſy, and terminated by large feet, armed with three great toes. His head is proportionably longer than that of the elephant; but his eyes are ſtill ſmaller, and ſeldom above half open. The upper, which projects over the under lip, is moveable, and can be ſtretched out about ſix or ſeven inches in length; and it is terminated by a pointed appendix, which gives this animal a power of collecting herbage in handfuls, as the elephant does with its trunk. This muſcular and flexible lip is a kind of hand or imperfect trunk; but it enables the creature to ſeize any object with force, and to feel with ſome dexterity. Inſtead of thoſe long ivory tuſks which conſtitute the armour of the elephant, the rhinoceros has a formidable horn, and two ſtrong inciſive teeth in each jaw. Theſe teeth, of which the elephant is deprived, are ſituated at a great diſtance from each other, one in each angle of the jaw. The under jaw is ſquare before; and there are no other inciſive

teeth

teeth in the anterior part of the mouth, which is covered by the lips. But beſide the four cutting teeth, in the four corners of the mouth, there are twenty-four grinders, ſix on each ſide of the two jaws. He holds his ears always erect: In figure they reſemble thoſe of the hog; but they are proportionally ſmaller. The ears are the only parts of the body on which there are hairs, or rather briſtles. The extremity of the tail, like that of the elephant, is garniſhed with a buſh of large, ſolid, hard briſtles.

Dr. Parſons, a celebrated phyſician in London, to whom the republic of letters is much indebted for many valuable diſcoveries in natural hiſtory, and to whom I owe the higheſt acknowledgments for the marks of eſteem and friendſhip with which he has been pleaſed to honour me, publiſhed, in the year 1743, a hiſtory of the rhinoceros, from which I ſhall the more willingly make extracts, becauſe every compoſition of that gentleman merits the attention and confidence of the public.

Though the rhinoceros was frequently exhibited in the Roman ſpectacles, from the days of Pompey to thoſe of Heliogabalus; though he has often been tranſported into Europe in more modern times; and though Bontius, Chardin, and Kolben, have drawn figures of him both in India and Africa; yet ſo ill was he repreſented and deſcribed, that he was very imperfectly known till the errors and caprices of thoſe who had

had publiſhed figures of him were detected by inſpection of the animals which arrived in London in the years 1739 and 1741. The figure given by Albert Durer was the firſt, and the leaſt conformable to Nature; yet it was copied by moſt naturaliſts, ſome of whom loaded it with preposterous drapery and foreign ornaments. That of Bontius is more ſimple and correct; but the inferior part of the legs is improperly repreſented. That of Chardin, on the contrary, gives a pretty good idea of the feet, and the folds of the ſkin; but, in other reſpects, it has no reſemblance to the animal. That of Camerarius is no better; neither is that drawn from the rhinoceros exhibited at London in the year 1685, and which was publiſhed by Carwitham in the 1739. In fine, the figures on the ancient pavement of Præneſte, and on Domitian's medals, are extremely imperfect; but they have the merit of not being deformed by the imaginary ornaments repreſented in the figure drawn by Albert Durer. Dr. Parſons has taken the trouble of drawing this animal himſelf* in three different views,

* One of our learned philoſophers, M. de Mours, has made ſome remarks on this ſubject, which muſt not be omitted. 'The 'figure,' ſays he, 'of the rhinoceros which Dr. Parſons has added to his Memoir, and which he drew from the life, is ſo different from that engraved at Paris in the year 1749, from a 'rhinoceros exhibited at the fair of Saint-Germain, that it is 'difficult to recogniſe them to be the ſame animal. That of 'Dr. Parſons is meager, and the folds of the ſkin are fewer in 'number,

views, before, behind, and in profile. He has likewise drawn the male organs of generation, the

'number, less marked, and some of them placed in a different 'position. The head, particularly, has hardly any resemblance 'to that of the Saint-Germain rhinoceros. We cannot, however, 'entertain a doubt with regard to the accuracy of Dr. Parsons. 'The reasons of such remarkable differences must be sought for 'in the age and sex of the two animals. That of Dr. Parsons 'was drawn from a male rhinoceros, which exceeded not the 'age of two years. That which I have here added, was drawn 'from a picture of the celebrated M. Oudry, a most distinguish-'ed animal painter. He painted from the life, and of the na-'tural size, the Saint-Germain rhinoceros, which was a female, 'and at least eight years old; I say at least eight years; for we 'see by an inscription written on the bottom of a wooden 'print, entitled, *A true portrait of a living rhinoceros exhibited at the fair of Saint-Germain in Paris*, that this animal, when taken, 'in 1741, in the province of Assem belonging to the Mo-'gul, was three years old: And, eight lines lower, it is said, 'that the animal was only one month old when some Indians 'entangled it with ropes, after having slain the mother by their 'spears and darts. Hence it must have been at least eight 'years of age, and might be ten or twelve. This difference of 'age is probably the reason of the remarkable differences be-'tween Dr. Parsons's figure and that of M. Oudry, whose pic-'ture, executed by the order of the King, was exhibited in the 'painter's hall. I shall only remark, that M. Oudry has made 'the horn of his rhinoceros too long; for I examined the ani-'mal with great attention, and I find that this part is better 'represented in the wooden print. The horn of the present fi-'gure was drawn after this print, and the rest is copied from 'M. Oudry's picture. The animal which it represents was 'weighed, about a year before, at Stouquart, in the dutchy of 'Wittemberg, and its weight was at that time five hundred 'pounds. It eat, according to the relation of Captain Dowemot 'Wan-dermeer, who conducted it to Europe, sixty pounds of 'hay, and twenty pounds of bread, every day. It was very 'tame, and surprisingly agile, considering the enormity of its 'mass, and its unwieldy aspect.' These remarks, like all those of

the ſingle and double horns, as well as the tail, from other rhinoceroſes, whoſe parts are preſerved in the cabinets of Natural Hiſtory.

The rhinoceros which came to London in the year 1739, was ſent from Bengal. Though not above two years of age, the expence of his food and journey amounted to near one thouſand pounds ſterling. He was fed with rice, ſugar, and hay. He had daily ſeven pounds of rice, mixed with three pounds of ſugar, and divided into three portions. He had likewiſe hay and green herbs, which laſt he preferred to hay. His drink was water, of which he took large quantities at a time. He was of a peaceable diſpoſition, and allowed all parts of his body to be touched. When hungry or ſtruck by any perſon, he became miſchievous, and, in both caſes, nothing appeaſed him but food. When enraged, he ſprung forward, and nimbly raiſed himſelf to a great height, puſhing, at the ſame time, his head furiouſly againſt the walls, which he performed with amazing quickneſs, notwithſtanding his heavy aſpect and unwieldy maſs. I often obſerved, ſays Dr. Parſons, theſe movements produced by rage or impatience, eſpecially in the mornings before his rice and ſugar were brought to him. The vivacity and promptitude of his movements, Dr. Parſons adds, led

of M. de Mours, are judicious and ſenſible. See the figure in his French tranſlation of the Philoſophical Tranſactions, ann. 1743.

me to think, that he is altogether unconquerable, and that he could eaſily overtake any man who ſhould offend him.

This rhinoceros, at the age of two years, was not taller than a young cow that has never produced. But his body was very long and very thick. His head was diſproportionally large. From the ears to the horn there is a concavity, the two extremities of which, namely the upper end of the muzzle, and the part near the ears, are conſiderably raiſed. The horn, which was not yet above an inch high, was black, ſmooth at the top, but full of wrinkles directed backward at the baſe. The noſtrils are ſituated very low, being not above an inch diſtant from the opening of the mouth. The under lip is pretty ſimilar to that of the ox; but the upper lip has a greater reſemblance to that of the horſe, with this advantageous difference, that the rhinoceros can lengthen this lip, move it from ſide to ſide, roll it about a ſtaff, and ſeize with it any object he wiſhes to carry to his mouth. The tongue of this young rhinoceros was ſoft, like that of a calf *. His eyes had no vivacity: In

* Moſt voyagers and all naturaliſts, both ancient and modern, tell us, that the tongue of the rhinoceros is very rough, and its papillæ ſo ſharp, that with the tongue alone, he tore the fleſh from a man's body even to the bones. This fact, which is every where related, appears to be very ſuſpicious and ill imagined; becauſe the rhinoceros does not eat fleſh, and animals, in general, which have rough tongues, are ſeldom carnivorous.

figure,

figure, they refembled thofe of the hog, and were fituated lower, or nearer the noftrils, than in any other quadruped. His ears are large, thin at the extremities, and contracted at their origin by a kind of annular rugofity. The neck is very fhort, and furrounded with two large folds of fkin. The fhoulders are very thick, and, at their juncture, there is another fold of fkin, which defcends upon the fore legs. The body of this young rhinoceros was very thick, and pretty much refembled that of a cow about to bring forth. Between the body and crupper there is another fold, which defcends upon the hind legs. Laftly, another fold tranfverfely furrounds the inferior part of the crupper, at fome diftance from the tail. The belly was large, and hung near the ground, particularly its middle part. The legs are round, thick, ftrong, and their joint bended backwards. This joint, which, when the animal lies, is covered with a remarkable fold of the fkin, appears when he ftands. The tail is thin, and proportionally fhort; that of the rhinoceros fo often mentioned exceeded not fixteen or feventeen inches in length. It turns a little thicker at the extremity, which is garnifhed with fome fhort, thick, hard hairs. The form of the penis is very extraordinary. It is contained in a prepuce or fheath, like that of the horfe; and the firft thing that appears in the time of erection, is a fecond prepuce, of a flefh-colour, from which there iffues a hollow

 tube,

tube, in the form of a funnel cut and bordered ſomewhat like a flower de luce*, and conſtitutes the glans and extremity of the penis. This anomalous glans is of a paler fleſh-colour than the ſecond prepuce. In the moſt vigorous erection, the penis extends not above eight inches out of the body; and it is eaſily procured by rubbing the animal with a handful of ſtraw when he lies at his eaſe. The direction of this organ is not ſtraight, but bended backward. Hence he throws out his urine behind; and, from this circumſtance, it may be inferred, that the male covers not the female, but that they unite with their crúppers to each other. The female organs are ſituated like thoſe of the cow, and ſhe exactly reſembles the male in figure and groſſneſs of body. The ſkin is ſo thick and impenetrable, that, when a man lays hold of any of the folds, he would imagine he is touching a wooden plank of half an inch thick. When tanned, Dr. Grew remarks, it is exceſſively hard, and thicker than the hide of any other terreſtrial animal. It is every where covered more or leſs with incruſtations in the form of galls or tuberoſities, which are pretty ſmall on the top of the neck and back, but become larger on the ſides. The largeſt are on the ſhoulders and crupper, and are ſtill pretty large on the thighs and legs, upon which they are ſpread all round, and even on the feet. But, between the folds, the

* Phil. Tranſ. No. 470. pl. 111. Edwards's Gleanings.

ſkin

ſkin is penetrable, delicate, and as ſoft to the touch as ſilk, while the external part of the fold is equally hard with the reſt. This tender ſkin between the folds is of a light fleſh-colour; and the ſkin of the belly is nearly of the ſame colour and conſiſtence. Theſe galls or tuberoſities ſhould not be compared, as ſome authors have done, to ſcales. They are ſimple indurations of the ſkin only, without any regularity in their figure, or ſymmetry in their reſpective poſitions. The flexibility of the ſkin in the folds enables the rhinoceros to move with facility his head, neck, and members. The whole body, except at the joints, is inflexible, and reſembles a coat of mail. Dr. Parſons remarks, that this animal liſtened with a deep and long continued attention to any kind of noiſe; and that, though he was ſleeping, eating, or obeying any other preſſing demands of nature, he raiſed his head and liſtened till the noiſe ceaſed.

In fine, after giving this accurate deſcription of the rhinoceros, Dr. Parſons examines whether the rhinoceros, with a double horn, exiſts; and, having compared the teſtimonies of the ancients and moderns, and the remains of this variety in the collections of natural objects, he, with much probability, concludes, that the rhinoceroſes of Aſia have commonly but one horn, and that thoſe of Africa have generally two.

It is unqueſtionably true, that ſome rhinoceroſes have but one horn, and that others have

 two.

two*. But it is not equally certain that this variety is conſtant, and depends on the climate of Africa or India; or that this difference is alone ſufficient to conſtitute two diſtinct ſpecies. It appears that the rhinoceroſes with one horn have this excreſcence always longer than thoſe with two. There are ſingle horns of three and a half, and perhaps of above four feet in length, by ſix or ſeven inches diameter at the baſe. Some double horns are two feet long †. Theſe horns are commonly of a brown or olive colour; though there are inſtances of their being gray, and even white. They have only a ſlight concavity in form of a cup under the baſe, by which they are fixed to the ſkin of the noſe. The reſt of the horn is ſolid, and harder than common horn. It is with this weapon that the rhinoce-

* Kolben aſſerts poſitively, and as if he had been an eye-witneſs, that the firſt horn of the rhinoceros is upon the noſe, and the ſecond upon the front, in a right line with the firſt; that the latter, which is brown, never exceeds two feet in length; and that the ſecond is yellow, and ſeldom longer than ſix inches; *Deſcript du Cap de Bonne Eſperance, tom.* iii. *p.* 17.—But we have already mentioned double horns, the ſecond differing very little from the firſt, which was two feet long, and both were of the ſame colour. Beſides, it appears to be certain, that they are never at ſuch a diſtance from each other, as this author has placed them; for the baſis of the two horns, preſerved in the cabinet of Sir Hans Sloane, were not three inches aſunder.

† Urſus cornu gemino; *Martial. Spectac. ep.* 22. *Phil. Tranſ. Abrid. vol.* ix. *p.* 100. *vol.* xi. *p.* 910. *Phil. Tranſ. vol.* lvi. *p.* 32. *tab.* 2. *Flacourt, Hiſt. Madag. p.* 395. *Lobo Abyſſ. p.* 230. Rhinoceros bicornis; *Linn. Syſt. Nat. p.* 104.

ros

ros is ſaid to attack and ſometimes mortally wound the largeſt elephants, whoſe tall legs give the rhinoceros an opportunity of ſtriking, with his ſnout and horn, their bellies, where the ſkin is moſt tender and penetrable. But, if he miſſes his firſt blow, the elephant throws him on the ground and kills him.

The horn of the rhinoceros is more eſteemed by the Indians than the ivory of the elephant, not on account of its real utility, though they make ſeveral toys of it with the chiſel and turner's lathe, but on account of certain medicinal qualities they aſcribe to it*. The white horns, being

* Sunt in regno Bengalen rhinocerotes Luſitanis *Abadas* dicti, cujus animalis corium, dentes, caro, ſanguis, ungulæ, et cæteræ ejus partes, toto genere reſiſtunt venenis; qua de cauſa in maximo pretio eſt apud Indos.—In thoſe parts of Bengal which border on the Ganges, the rhinoceroſes or unicorns, there called *Abades*, are very common, and numbers of their horns are brought to Goa. They are about two palms in circumference at the baſe, gradually taper to a point, and ſerve the animal as a defenſive weapon. They are of an obſcure colour, and the cups made of them are highly eſteemed, eſpecially if they have the power of counteracting poiſonous liquors; *Voyage du P. Philippe, p.* 371.—Every part of the rhinoceros's body is medicinal. His horn is a powerful antidote againſt all kinds of poiſon; and the Siameſe make a great article of traffic with it among the neighbouring nations. Some of them are ſold for more than a hundred crowns. Thoſe which are of a bright gray colour, and ſpotted with white, are moſt valued by the Chineſe; *Hiſt. Nat. de Siam, par Nic. Gervaiſe, p.* 34.—The horns, teeth, toes, fleſh, ſkin, blood, and even their urine and excrements, are in great requeſt among the Indians, as powerful remedies for different diſeaſes; *Voyage de la Compagnie des Indes de Hollande, tom.* i. *p.* 417.—

being rareſt, are in great requeſt. Among the preſents ſent by the King of Siam to Lewis XIV. in the year 1686*, were ſix horns of the rhinoceros. In the royal cabinet we have twelve, of different ſizes; and one of them, though cut, is three feet eight inches and a half long.

The rhinoceros, without being ferocious, carnivorous, or even extremely wild, is, however, perfectly untractable †. He is nearly among large, what the hog is among ſmall animals, raſh and brutal, without intelligence, ſentiment, or docility. He ſeems even to be ſubject to paroxyſms of fury, which nothing can appeaſe;

417.—His horn is placed between the two noſtrils; it is very thick at the baſe, and terminates in a ſharp point: It is of a greeniſh brown colour, and not black, as ſome authors maintain. When very gray or approaching to white, it brings a high price. But it is always dear, on account of the value put on it by the Indians; *Idem, tom.* vii. *p.* 277.

* Among the preſents ſent by the King of Siam to France, in the year 1686, were ſix rhinoceroſes horns, which were greatly valued over all the Eaſt. The Chevalier Vernati has written from Batavia to Britain, that the horns, teeth, toes, and blood of the rhinoceros, are antidotes, and that they are as much uſed in the Indian pharmacopœia as the theriaca in that of Europe; *Voyage de la Compagnie des Indes de Hollande, tom.* vii. *p.* 484.

† Chardin ſays, (*tom.* iii. *p.* 45.) that the Abyſſinians tame the rhinoceros, and train him to labour, like the elephants. This fact ſeems to be extremely ſuſpicious: No other author mentions it; and it is well known, that, in Bengal, Siam, and other ſouthern parts of India, where the rhinoceros is, perhaps, ſtill more common than in Æthiopia, and where the natives are accuſtomed to tame the elephants, he is regarded as an irreclaimable animal, of which no domeſtic uſe can be made.

for

for the one which Emanuel King of Portugal ſent to the Pope in the year 1513, deſtroyed the veſſel in which they were tranſporting him*; and the rhinoceros, which we lately ſaw in Paris, was drowned in the ſame manner in its voyage to Italy. Like the hog, theſe animals are fond of wallowing in the mire. They love moiſt and marſhy grounds, and never quit the banks of rivers. They are found in Aſia and Africa, in Bengal †, Siam ‡, Laos ||, Mogul §, Sumatra **, at Java in Abyſſinia ††, in Æthiopia ‡‡, in the country of the Anzicos ||||, and as far as the Cape of Good Hope §§. But, in general, the ſpecies is not numerous, and much leſs diffuſed than that of the elephant. The female produces but one at a time, and at conſiderable intervals. During the firſt month, the

* Philoſophical Tranſactions, No. 470.

† Voyage du P. Philippe, p. 371.—Voyage de la Compagnie des Indes de Hollande, tom. i. p. 417.

‡ Hiſtoire Naturelle de Siam, par Gervaiſe, p. 33.

|| Journal de l'Abbé de Choiſy, p. 339.

§ Voyage de Tavernier, tom. iii. p. 97.—Voyage d'Edward Terri, p. 15.

** Hiſtoire Generale des Voyages, par M. l'Abbé Prevôt, tom. ix. p. 339.

†† Voyage de la Compagnie des Indes de Hollande, tom vii. p. 277.

‡‡ Voyage de Chardin, tom, iii. p. 45.—Relation de Thevenot, p. 10.

|||| Hiſtoire Generale des Voyages, par M. l'Abbé Prevôt, tom. v. p. 91.

§§ Voyage de Franc. le Guat. tom. ii. p. 145.—Deſcription du Cap de Bonne-eſperance, par Kolbe, tom. iii. p. 15 et ſuiv.

young

young rhinoceros exceeds not the ſize of a large dog *. When recently brought forth, it has no horn †, though the rudiments of it appear in the fœtus. At the age of two years, the horn exceeds not an inch in length ‡. and, at the age of ſix, it is from nine to ten inches long ‖ : Now, as ſome of theſe horns are known to be near four feet in length, it appears that they continue to grow during the half, or perhaps during the whole of the animal's life, which muſt be conſiderably long, ſince the rhinoceros deſcribed by Dr. Parſons had only acquired about one half of its height at the age of two years; from which we may conclude, that this animal, like man, ſhould live ſeventy or eighty years.

Without the capacity of becoming uſeful, like the elephant, the rhinoceros is equally hurtful by his voracity, and particularly by the great waſte he makes in the cultivated fields. He is of no uſe till he is ſlain. His fleſh is reckoned

* We have ſeen a young rhinoceros which was not larger than a dog. It followed its maſter every where, and drank the milk of the buffalo. But it lived only three weeks. The teeth were beginning to appear; *Voyage de la Compagnie des Indes de Hollande, tom.* vii. *p.* 483.

† In two young rhinoceroſes, nothing but a prominence was obſerved on the place where the horns were to ariſe, though the animals were then as large as an ox. But their legs are very ſhort, eſpecially thoſe before, which are ſhorter than the hind legs; *Voyage de Pietro della Valle, tom.* iv. *p.* 245.

‡ Phil. Tranſ. No. 470.

‖ Id. ibid.

excellent by the Indians and Negroes*; and Kolbe ſays he often eat it with pleaſure. His ſkin makes the hardeſt and beſt leather in the world †; and not only his horn, but all the other parts of his body, and even his blood ‡, urine, and excrements, are eſteemed to be antidotes againſt poiſon, or remedies for particular diſeaſes. Theſe antidotes or remedies, extracted from different parts of the rhinoceros, are of equal uſe in the Indian Pharmacopœia as the theriaca in that of Europe ‖. Moſt of the virtues aſcribed to both are probably imaginary: But how many objects are in the higheſt repute, which have no value but in the opinions of men?

The rhinoceros feeds on the groſſeſt herbs, as thiſtles and thorny ſhrubs, which he prefers to the ſoft paſture of the beſt meadows §. He is fond

* The Indians eat the fleſh of the rhinoceros, and reckon it excellent. They even derive advantage from his blood, which they collect with care as a remedy for diſeaſes in the breaſt; *Hiſt. Nat. de Siam, par Gervaiſe, p.* 35.

† His ſkin is of a fine gray colour, approaching to black, like that of the elephant; but it is rougher and thicker than that of any other animal. . . . The ſkin is covered every where, except on the neck and head, with ſmall knots or tubercles, &c.; *Voyage de Chardin, tom.* iii. *p.* 45.

‡ Voyage de Mandelſlo. tom. ii. p. 350.

‖ Voyage de la Comp. des Indes de Hollande, tom. vii. p. 484.

§ This animal feeds upon plants, and prefers bruſhwood, broom, and thiſtles. But of all plants he is fondeſt of a ſhrub which reſembles the juniper, and is called the *rhinoceros ſhrub.* Great quantities of it grow on heathy lands and on the mountains;

fond of the ſugar cane, and likewiſe eats all kinds of grain. Having no appetite for fleſh, he neither diſturbs the ſmall nor fears the large animals, but lives in peace with all, not excepting the tiger, who often accompanies the rhinoceros, without daring to attack him." This peaceful diſpoſition renders the combats between the elephant and the rhinoceros very ſuſpicious: Such combats muſt at leaſt be rare, ſince there is no motive to war on either ſide. Beſides, no antipathy has ever been remarked between theſe animals. They have been known, even in a ſtate of captivity, to live peaceably together, without diſcovering any marks of reſentment or antipathy *. Pliny, I believe, is the firſt author who mentions theſe combats between the elephant and rhinoceros. It appears that theſe animals were compelled to fight at the Roman ſpectacles †; and from hence, probably, the idea was formed, that, when in their natural

mountains; *Deſcript. du Cap de Bonne-eſperance, par Kolbe, tom.* iii. *p.* 17.

* The Dutch hiſtory, entitled *l'Ambaſſade de la Chine*, gives a falſe deſcription of this animal, eſpecially when it exhibits the rhinoceros as the chief enemy of the elephant; for the rhinoceros I am mentioning was kept in the ſame ſtable with two elephants, and I have ſeveral times ſeen them near each other without diſcovering the ſmalleſt antipathy. An Æthiopian ambaſſador had brought this animal as a preſent; *Voyage de Chardin, tom.* iii. *p.* 45.

† The Romans took pleaſure in making the rhinoceros and elephant fight at their public ſhews; *Singular. de la France Antarctique, par André Thevet, p.* 41.

ſtate of liberty, they fight in the ſame manner. But every action without a motive is unnatural; it is an effect without a cauſe, which cannot happen but by accident.

The rhinoceroſes aſſemble not, nor march in troops like the elephants. They are more ſolitary and ſavage; and it is, perhaps, more difficult to hunt, and to overcome them. They never attack men *, unleſs they are provoked, when they become furious and formidable. Their ſkin is ſo hard as to reſiſt ſabres, lances, javelins, and even muſket balls †. The only penetrable parts of the body are the belly,

* The rhinoceros never attacks any perſon, nor becomes furious, unleſs he is provoked, and then his ferocity is tremendous; he grunts like a hog, and overturns trees and every thing that comes in his way; *Voyage de la Compagnie des Indes de Hollande, tom.* vii. *p.* 278.

† His ſkin is thick, hard, and rough. . . It is even impenetrable by the ſabres of the Japaneſe, and coats of arms, bucklers, &c. are made of it; *Id. Ibid. p.* 483.—The rhinoceros ſeldom attacks man, unleſs when provoked, or the perſon wears a red habit. In both theſe caſes, he becomes furious, and overturns every thing that oppoſes him. When theſe animals attack a man, they ſeize him by the middle of the body, and toſs him up with ſuch force, that he is killed by the fall. . . . However enraged he may be, it is eaſy to avoid his approach: He is, indeed, very ſwift; but he turns with great difficulty. Beſides, according to my information, he ſees only what is before him. Hence, when he comes within a few paces, we have only to ſtep to a ſide; for he then loſes ſight of us, and it is very difficult for him to return in queſt of us. I have experienced this fact, having more than once ſeen him advance toward me with all his fury; *Deſcript. du Cap de Bonne-eſperance, par Kolbe, tom.* iii. *p.* 17.

the

the eyes, and about the ears*. Hence the hunters, inſtead of attacking him face to face, follow him at a diſtance by the tracks of his feet, and watch till he lies down to ſleep. We have, in the royal cabinet, a fœtus of a rhinoceros, which was extracted from the body of the mother, and ſent to us from the iſland of Java. By the memoir which accompanied this fœtus, we are informed, that twenty-eight hunters having aſſembled to attack the mother, they followed her at a diſtance for ſome days, detaching one or two of their number, from time to time, in order to reconnoitre her ſituation; that, by this means, they ſurpriſed her when aſleep, and ſilently approached ſo near, that the whole twenty-eight muſkets were diſcharged at once into the lower part of her belly.

From the deſcription given by Dr. Parſons, it appears that this animal has an acute and very attentive ear. We are likewiſe aſſured that his

* It is difficult to kill him; and men never attack him without danger of being torn to pieces. Thoſe who are accuſtomed to hunt the rhinoceros find means, however, to defend themſelves from his fury; for he is fond of marſhy grounds; they obſerve when he repairs thither, and, concealing themſelves among the buſhes oppoſite to the direction of the wind, they watch till he lies down either to ſleep or to wallow, that they may have an opportunity of ſhooting him near the ears, where alone he can receive a mortal wound. They place themſelves againſt the wind; becauſe the ſcent of the rhinoceros is ſo acute, that he never approaches any object he perceives till the ſmell of it reaches his noſtrils; *Hiſt. Nat. de Siam, par Gervaiſe, p.* 35.

ſenſe

ſenſe of ſmelling is excellent. But it is ſaid, that his eyes are not good, and that he ſees ſuch objects only as are before him *. The extreme minuteneſs of his eyes, their low, oblique, and deep ſituation, the dullneſs, and the ſmall degree of motion they ſeem to poſſeſs, tend to confirm this fact. His voice, when he is in a ſtate of tranquillity, is blunt, and reſembles the grunting of a hog; but, when enraged, it becomes ſharp, and is heard at a great diſtance. Though he lives on vegetables only, he does not ruminate. Hence it is probable, that, like the elephant, he has but one ſtomach, and capacious bowels, which ſupply the place of many ſtomachs. His conſumption of food, though conſiderable, is not near ſo great as that of the elephant; and it appears, from the denſity and un-

* See the preceding note.—The eyes of the rhinoceros are very ſmall, and he ſees only forward. When he walks, or purſues his prey, he proceeds always in a direct line, forcing, overturning, and piercing through every obſtruction that falls in his way. Neither buſhes, nor trees, nor thickets of brambles, nor large ſtones, can turn him from his courſe. With the horn on his noſe, he tears up trees, raiſes ſtones high in the air, and throws them behind him to a conſiderable diſtance, and with a great noiſe: In a word, he overthrows every object which he can lay hold of. When he is enraged, and meets with no obſtruction, lowering his head, he plows the ground, and throws large quantities of earth over his head. He grunts like a hog: His cry, when in a ſtate of tranquillity, does not reach far; but, when in purſuit of his prey, it may be heard at a great diſtance; *Deſcript. du Cap de Bonne Eſperance, par Kolbe.*

 interrupted

interrupted thickneſs of his ſkin, that he alſo loſes much leſs by perſpiration.

SUPPLEMENT.

I Have ſeen a ſecond rhinoceros, which was lately brought to the royal menagery. In the month of September 1770, if the people who conducted it can be credited, the animal was only three months old. But, I am perſuaded, that it was at leaſt two or three years of age; for its body, including the head, was already eight feet two inches long, five feet ſix inches high, and eight feet two inches in circumference. A year afterward, its body was lengthened ſeven inches; ſo that on the 28th day of Auguſt 1771, it was eight feet nine inches, including the length of the head, five feet nine inches high, and eight feet nine inches in circumference. On the 12th day of Auguſt 1772, the length of the body, comprehending the head, was nine feet four inches, the height of the crupper ſix feet four inches, and that of the withers only five feet eleven inches. Its ſkin had the colour and appearance of an old elm tree, ſpotted in ſome places with black and gray, and in others doubled into deep furrows, which formed a kind of ſcales. It had only one horn, the colour

colour of which was brown, and its ſubſtance ſolid and hard. The eyes are ſmall and prominent, the ears large, and pretty ſimilar to thoſe of an aſs. The back, which was hollow, or depreſſed, ſeemed to be covered with a natural ſaddle. The legs were ſhort and very thick. The feet were rounded behind, and divided before into three hoofs. The tail reſembled that of an ox, and was garniſhed with black hairs at the extremity. The penis lay along the teſticles, and erected itſelf for the diſcharge of urine, which the animal threw out to a great diſtance. The point of it was alſo very remarkable, forming a cavity like the mouth of a trumpet. The ſheath from which it iſſues is fleſhy, and of a vermilion colour, like the penis itſelf. This fleſhy ſubſtance, which formed the firſt tube, came out of a ſecond ſheath compoſed of ſkin, as in other quadrupeds. The tongue is ſo hard and rough, that it tears off the ſkin of any perſon whom it licks; hence this animal eats large thorns, without feeling any pain. The rhinoceros requires one hundred and ſixty pounds of food every day. His fleſh is much reliſhed by the Indians and Africans, and eſpecially by the Hottentots. If trained when young, he might be rendered domeſtic, and, in this ſtate, he would multiply more eaſily than the elephant.

‘ I could never diſcover the reaſon (M. P. re-
‘ marks) why in Aſia the rhinoceros is allowed

 ‘ to

'to remain in a wild ſtate, while in Abyſſinia he
'is rendered domeſtic, and is employed in carrying burdens *.'

'M. de Buffon,' ſays Mr. Bruce, 'conjectured that there were, in the interior parts of Africa, rhinoceroſes with two horns. This conjecture is fully verified; for all the rhinoceroſes I ſaw in Abyſſinia had two horns. The firſt, that is, the one neareſt the noſe, is of the common form; the ſecond is ſharp at the point, and always ſhorter than the firſt. Both ſpring at the ſame time; but the firſt grows more quickly, and exceeds the other in ſize, not only during the time of growth, but during the whole life of the animal †.'

On the other hand, M. Allamand, a very able naturaliſt, wrote to M. Daubenton a letter, dated at Leyden, October 31, 1766, in the following terms:

'I recollect a remark of M. Parſons, in a paſſage quoted by M. de Buffon: He ſuſpected that the rhinoceroſes of Aſia have but one horn, and that thoſe of the Cape of Good Hope have two. I ſuſpect the very oppoſite: The heads of the rhinoceroſes which I received from Bengal and other parts of India, had always double horns, and all thoſe which came

* Defenſe des Recherches ſur les Americains, p. 95.

† Note communicated by Mr. Bruce to M. de Buffon.

'from

Plate CLXVII.

A. Bell Sculpt.

RHINOCEROS.

'from the Cape of Good Hope had but one
'horn.'

This laſt paſſage proves what we have formerly remarked, that the rhinoceroſes with double horns form a variety in the ſpecies, a particular race, which is found equally in Aſia and Africa.

The CAMEL * and DROMEDARY **.

THE names *Camel* and *Dromedary* ſignify not two different ſpecies, but only two diſtinct races of the camel, which have ſubſiſted long

* There are two ſpecies of the camel, the Bactrian camel, and the Arabian camel or dromedary. They have no cutting teeth in the upper jaw. The upper lip is divided, like that of the hare; and they have ſix cutting teeth in the lower jaw.—The Bactrian camel has two bunches on the back, a ſmall head, ſhort ears, and a long ſlender, bending neck. The height, to the top of the bunches, is ſix feet ſix inches. The hair is ſoft, longeſt about the neck, under the throat, and about the bunches. The colour of the hair on the protuberances is duſky, on the other parts it is a reddiſh aſh-colour. The tail is long, the hairs on the middle is ſoft, and coarſe, black, and long on the ſides. The hoofs are ſmall; the feet flat, divided above, but not through. The bottom of the feet is exceſſively tough, yet pliant. There are ſix calloſities on the legs, one on each knee; one on the inſide of each fore-leg, on the upper joint; one on the inſide of the hind-leg, at the bottom of the thigh; another on the lower part of the breaſt, the places that the animal reſts on when it lies down; *Pennant's Synopſ. of Quad. p.* 60.

In Greek, Καμηλος Βακτρος; in Latin, *Camelus*; in Italian, *Camelo*; in Spaniſh, *Camelo*; in German, *Koemel*; in Hebrew, *Gamal*; in Chaldean, *Gamala*; in ancient Arabic, *Gemal*; in modern Arabic, *Gimel*; in French, *Chameau*. From theſe denominations, it appears, that the name of this animal has been adopted into modern languages, with little variation, from the ancient Hebrew, Chaldean, and Arabic.

Camelus

long previous to the records of hiſtory. The chief, and perhaps the only ſenſible character by which theſe two races are diſtinguiſhed, is, that the camel has two bunches on the back, and the dromedary but one. The latter is alſo ſomewhat ſmaller and weaker than the camel. But both

Camelus Bactrianus; *Ariſt. Hiſt. Anim. lib.* ii. *cap.* 1.—*Plin. lib.* viii. *cap.* 18.—*Geſner. Icon. Quad. p.* 22.—*Proſp. Alpin. Hiſt. Nat. Ægypt. tom.* ii. *p.* 224. *tab.* 13.

Camel called Becheti; *Leo, Afric. p.* 338.

Camelus duobus in dorſo tuberibus, ſeu Bactrianus; *Raii Synopſ. Quad. p.* 145.

Camelus Bactrianus, tophis dorſi duobus; *Linn. Syſt. Nat. p.* 90.—*Klein. Quad. p.* 41.

Perſian camel; *Ruſſel's Aleppo, p.* 57.

** The Arabian camel, or dromedary, has but one bunch on the back. In all other reſpects it is like the preceding, and is equally adapted for riding or carrying loads; *Pennant's Synopſ. of Quad. p.* 62.

In Greek, Δρομας, or rather *Camelus Dromas*; for dromas is only an adjective derived from *dromos*, which ſignifies *ſwiftneſs*, and *camelus dromas* is equivalent to the *ſwift running camel*: In modern Latin, *Dromedarius*; in the Levant, *Maihary*, according to Doctor Shaw.

Camelus Arabicus; *Ariſt. Hiſt. Anim. lib.* ii. *cap.* 1.—*Plin. lib.* viii. *cap.* 18.

Camelus dromas; *Geſner. Quad. p.* 159. *Icon. Quad. p.* 23. *Proſp. Alpin. Hiſt. Ægypt. tom.* i. *p.* 223. *tab.* 12.

Camelus unico in dorſo gibbo, ſeu dromedarius; camel or dromedary; *Raii Synopſ. Quad. p.* 143. *Klein. Quad. p.* 42.

Camel called *Hugiun*; *Leo, Afric. p.* 338.

Camelus dromedarius, topho dorſi unico; *Linn. Syſt. Nat. p.* 90.

Chameau; *Mem. pour ſervir à l'Hiſt. des Animaux, part.* i. *p.* 69. *pl.* 7.

Camel with one bunch; *Pocock's Travels, vol.* i. *p.* 207. *Shaw's Travels, p.* 239. *Ruſſel's Hiſt. of Aleppo, p.* 56. *Plaiſted's Journal, p.* 82.

of them intermix and produce; and the individuals which proceed from this crossing of the races, are the most vigorous, and preferred to all others *. These mongrels form a secondary race, which multiply among themselves, and likewise mix with the primary races. Hence, in this species, as well as in those of other domestic animals, there are many varieties, the most general of which proceed from the influence of

* The Persians have several kinds of camels. Those with two bunches they call *Bughur*, and those with one, *Schuttur*. Of these last there are four kinds. Those called, from their excellence, *Ner*, that is *male*, which proceed from a mixture of a dromedary, or a camel with two bunches, and a female with one bunch, which is called *Maje*, are never allowed to be covered by others, and are so highly esteemed, that some of them sell for a hundred crowns. They carry loads of nine or ten hundred pounds, and are most indefatigable. When in season, they eat little, foam at the mouth, grow enraged, and bite. To prevent them from hurting their keepers, the Persians put muzzles on their mouths, which are called *agrah*. The camels which proceed from this kind degenerate much, and become weak and indolent. It is for this reason that they are called *Jurda Kaidem* by the Turks, and sell at thirty or forty crowns only.

The third kind, called *Lohk*, are not so good as the *Bughur*. When in season, they foam not, but push out from under their throat a red bladder, which they again retract with their breath, raise their heads, and often swell. They sell at sixty crowns, and are by no means so strong as the other kinds. Hence the Persians, when they speak of a valiant man, say that he is a *Ner*, and a poltroon is called *Lohk*. A fourth kind are called by the Persians *Schuturi Baad*, and by the Turks *Jeldovesi*, that is, *Wind camels*, They are smaller, but more sprightly than the other kinds; for, instead of walking, like ordinary camels, they trot and gallop as well as horses; *Voyage d'Olearius, tom.* i. *p.* 550.

different climates. Ariſtotle * has marked the two principal races with much propriety; the firſt, or the one with two bunches, under the name of the *Bactrian camel* †, and the ſecond under that of the *Arabian camel*. The firſt are called *Turkiſh camels* ‡, and the other *Arabian camels*. This diſtinction ſtill ſubſiſts; but, as many parts of Aſia and Africa are now diſco-

* Camelus proprium inter cæteros quadrupedes habet in dorſo, quod tuber appellant, ſed ita ut Bactrianæ ab Arabiis differant; alteris enim bina, alteris ſingula tubera habentur; *Ariſt. Hiſt. Anim. lib.* ii. *cap.* 1.—Theodore Gaza, whoſe tranſlation I have uniformly followed, when I quote from Ariſtotle, appears to have rendered this paſſage in an ambiguous manner; *Alteris enim bina, alteris ſingula tubera habentur*, ſignifies only that ſome have two, and others but one bunch; while the Greek text mentions expreſsly, that the Arabian camels have but one, and the Bactrian camels two bunches. Pliny likewiſe, who, in this article, as well as in many others, copies Ariſtotle, has tranſlated this paſſage much better than Gaza; *Cameli Bactriani et Arabici differunt, quod illi bina habent tubera in dorſo, hi ſingula*; Plin. Hiſt. Nat. lib. viii. cap. 18.

† Bactriana is a province of Aſia, which now includes Turkeſtan, the country of the Uſbecks, &c.

‡ We went to Mount Sinai upon camels, becauſe there is no water on this road, and other animals cannot travel without drinking. . . . But the Arabian camels, which are ſmall, and different from thoſe of Cairo, who come from Sour, and other places, can travel three or four days without drink. . . They travel from Cairo to Jeruſalem, not only upon theſe ſmall Arabian camels, but upon a larger kind, which are called *Turkiſh camels*; *Voyage de Pietro della Valle, tom.* i. *p.* 360. *et* 408. — In Barbary, the dromedary is called *Maihari*; and is not ſo common in Barbary as in the Levant. . . . . This ſpecies differs from the ordinary camel, by having a rounder and handſomer body, and only one ſmall bunch on the back; *Shaw's Travels*.

vered,

vered, which were unknown to the ancients, it appears, that the dromedary is incomparably more numerous, and more generally diffuſed, than the camel. The latter is found only in Turkeſtan *, and ſome other places of the Levant †. But, in Arabia, the dromedary is more common than any other beaſt of burden. It is likewiſe very numerous in all the northern parts of Africa ‡, from the Mediterranean ſea to the river Niger ||. It is alſo found in

* The Academy having ordered the miſſioners ſent to China, in quality of King's mathematicians, to obtain information concerning ſome particulars in the hiſtory of the camel, the Perſian ambaſſador gave the following anſwers to the queries put to him by M. Conſtance: 1. That, in Perſia, there were camels with two bunches on the back; but that they came originally from Turkeſtan, and belong to the race of thoſe which the King of the Moors had brought from that country, the only known part of Aſia where this kind exiſts; and that thoſe camels were highly eſteemed in Perſia, becauſe their two bunches render them more proper for carriages. 2. That theſe bunches are not formed by a curvature of the back-bone, which is here as low as in any other part, but are only excreſcences of a glandulous ſubſtance, ſimilar to that which compoſes the udders of other animals; and that the interior bunch is about ſix inches high, and the poſterior an inch lower; *Mem. pour ſervir a l'Hiſt. des Animaux, part.* i. *p.* 80.

† The camels of the Calmuck Tartars are pretty large and ſtrong; but they have all two bunches; *Relation de la Grande Tartarie, p.* 267.

‡ Camelus animal blandum ac domeſticum maxima copia in Africa invenitur, præſertim in deſertis Lybiæ, Numidiæ, et Barbariæ; *Leon. Afric. Deſcript. Africæ, vol.* ii. *p.* 748.

|| The Moors have numerous flocks of camels upon the banks of the Niger; *Voyage au Senegal, par M. Adanſon, p.* 36.

Egypt*, in Perſia, in South Tartary †, and in the northern parts of India. Thus the dromedary occupies immenſe territories, and the camel is confined within narrow limits. The firſt inhabits dry and hot regions, the ſecond, countries which are leſs dry and more temperate; and the whole ſpecies, including both varieties, ſeems to be limited to a zone of three or four hundred leagues in breadth, extending from Mauritania to China; for, on either ſide of this zone, it has no exiſtence. This animal, though a native of warm climates, dreads thoſe which are exceſſively hot. The ſpecies terminates where that of the elephant commences; and it can neither ſubſiſt under the burning heat of the Torrid Zone, nor under the mild air of the Temperate. It ſeems to be an original native of Arabia ‡; for

* Audio vero in Ægypto longe plura quam quater centum millia camelorum vivere; *Proſp. Alp. Hiſt. Nat. Egypt. part.* i. *pag.* 226.

† Delectantur etiam Tartari Buratſkoi re pecuaria, maxime camelis, quorum ibi magna copia eſt, unde complures a caravannis ad Sinam tendentibus redimuntur, ita ut optimus camelus duodecim vel ad ſummum quindecim rubelis haberi poſſit; *Noviſſima Sinica hiſtoriam noſtri temporis illuſtratura, &c. edente G. G. L. pag.* 166.——Tartary abounds in cattle, and particularly in horſes and camels; *Voyage Hiſtorique de l'Europe, tom.* vii. *p.* 204.

‡ Arabia is the native country of camels; for, though they are found in all places into which they have been carried, and even multiply in theſe places; yet there is no part of the earth where they are equally numerous; *Voyage du P. Philippe, p.* 369.—Tanta apud Arabes eſt camelorum copia, ut

for this is not only the country where they are moſt numerous, but where they thrive beſt. Arabia is the drieſt country in the world, and where water is moſt rare. The camel is the moſt ſober of all animals, and can paſs ſeveral days without drink *. The ſoil is almoſt every where dry and ſandy. The feet of the camel are adapted for walking on ſands, and the animal cannot ſupport itſelf on moiſt and ſlippery ground †. This

ut eorum pauperrimus decem ad minus camelos habeat: Multique ſunt quorum quiſque quatuor centum ac mille etiam numerare poſſit; *Proſp. Alpin. Hiſt. Egypt. pag.* 226.

* Without the aſſiſtance of camels, it would be extremely difficult to traverſe the vaſt deſerts of Solyma, where neither bird, wild beaſt, herbage, nor even a muſhroom can be found, and where nothing is to be ſeen but mountains of ſand, rocks, and camel's bones. Theſe animals ſometimes paſs ſix or ſeven days without drinking, which I ſhould never have believed, if I had not ſeen the fact verified; *Relation du Voyage de Poncet et Ethiopie*; *Lettres Edifiantes, recueil* iv. *p.* 259.——In going from Aleppo to Iſpahan, by the great deſert, we travelled near ſix days without finding water, which, added to the three preceding, make the nine days I formerly mentioned, during which our camels had no drink; *Voyage de Tavernier, tom.* i. *p.* 202.

† Camels cannot walk upon fat or ſlippery ground. They are only fit for ſandy places; *Voyage de Jean Ovington, tom.* i. *p.* 222.—There are chiefly two kinds of camels, the one proper for warm countries, the other for cold. The camels of very warm countries, as thoſe which come from Ormus, and as far as Iſpahan, cannot walk when the ground is moiſt and ſlippery; for, by the ſpreading of their hind legs, they are in danger of tearing open their bellies: They are ſmall, and carry loads of only ſix or ſeven hundred pounds. . . . . . The camels of colder countries, as thoſe from Tauris to Conſtantinople,

This ſoil produces no paſture; the ox is alſo wanting; and the camel ſupplies his place.

When we conſider the nature and ſtructure of theſe animals, we cannot be deceived with regard to their native country, which muſt be ſuited to their frame and temperament, eſpecially when theſe are not modified by the influence of other climates. In vain have attempts been made to multiply them in Spain*; in vain have they been tranſported to America. They have neither ſucceeded in the one country nor in the other; and, in the Eaſt Indies, they are not found beyond Surat and Ormus. We mean not to ſay abſolutely, that they cannot ſubſiſt and produce in India, Spain, and America, and even in colder countries, as thoſe of France, Germany, &c. †. By keeping them, during the winter, in warm ſtables; by feeding them well, and treating them with care; by not employing them in labour, and not allowing them to go out for

tinople, are large, and commonly carry burdens of one thouſand pounds. They draw themſelves out of miry ground; but, when the earth is fat and ſlippery, they are obliged to go, ſometimes to the number of a hundred, at each other's ſides, in order to paſs over it; *Voyage de Tavernier, tom.* i. *p.* 161.

* Camels are frequently ſeen in Spain. They are ſent, by the governours of places, from the frontiers of Africa. But they never live long there; becauſe the country is too cold for them; *L'Afrique de Marmol, tom.* i. *p.* 50.

† M. le Marquis de Montmirail informs me, that he was aſſured that the King of Poland had, in the neighbourhood of Dreſden, camels and dromedaries which multiplied.

exerciſe,

exercife, but in fine weather, their lives might be preferved, and we might even hope to fee them produce. But fuch productions are rare and feeble; and the parents themfelves are weak and languid. In thefe climates, therefore, they lofe all their value, and, inftead of being ufeful, they coft their owners much expence in the rearing. But, in their native country, they conftitute the fole riches of their mafters *. The Arabians regard the camel as a prefent from heaven, a facred animal †, without whofe affiftance they could neither fubfift, carry on trade, nor travel. Camel's milk is the common food of the Arabians. They alfo eat its flefh that of the young camel being reckoned highly favoury. Of the hair of thofe animals, which is fine and foft, and which is completely renewed every year ‡, the

* Ex camelis Arabes divitias ac poffeffiones æftimant; et fi quando de divitiis principis aut nobilis cujufdam fermo fiat, poffidere aiunt tot camelorum, non aureorum, millia; *Leon. Afric. Defcript. Africæ, vol.* ii. *p.* 748.

† Camelos, quibus Arabia maxime abundat, animalia fancta ii appellant, ex infigni commodo quod ex ipfis indigenæ accipiunt; *Prof. Alpin. Hift. Egypt. pars* i. *p.* 225.

‡ In fpring, the hair of the camel falls off fo entirely, that he refembles a fcalded hog. He is then fmeared all over with pitch, to defend him from the flies. The hair of the camel is a fleece fuperior to that of any other domeftic animal. In thefe countries, it is made into very fine ftuffs, and, in Europe, hats are made of it, by mixing it with beaver's hair; *Voyage de Chardin, tom.* ii. *p.* 28.—In the fpring, the whole hair falls from the camel in lefs than three days. The fkin is completely naked, and then the flies become extremely troublefome, againft

the Arabians make ſtuffs for clothes, and other furniture. With their camels, they not only want nothing, but have nothing to fear*. In one day, they can perform a journey of fifty leagues into the deſert, which cuts off every approach from their enemies. All the armies of the world would periſh in purſuit of a troop of Arabs. Hence they never ſubmit, unleſs from choice, to any power. Figure to yourſelves a country without verdure, and without water, a burning ſun, an air always parched, ſandy plains, mountains ſtill more aduſt, which the eye runs over without perceiving a ſingle animated being; a dead earth, perpetually toſſed with the winds, and preſenting nothing but bones, ſcattered flints, rocks perpendicular or overturned; a deſert totally void, where the traveller never breathes under a ſhade, where nothing accompanies him, nothing recalls the idea of animated nature; abſolute ſolitude,

againſt which there is no other remedy but beſmearing the whole body with pitch; *Voyage de Tavernier, tom.* i. *p.* 162.—Præter alia emolumenta quæ ex camelis capiunt, veſtes quoque et tentoria ex iis habent; ex eorum enim pilis multa fiunt, maxime vero pannus, quo et principes oblectantur; *Proſp. Alpin. Hiſt. Ægypt. pars* i. p. 226.

* The camels conſtitute the wealth, the ſafety, and the ſtrength of the Arabs; for, by means of their camels, they carry all their effects into the deſerts, where they have nothing to fear from the invaſion of enemies; *L'Afrique d'Ogilvy, p.* 12.—Qui porro camelos poſſident Arabes ſteriliter vivunt ac libere, utpote cum quibus in deſertis agere poſſint; ad quæ, propter ariditatem, nec reges, nec principes pervenire valent; *Leon. Afric. Deſcript. Africæ, vol.* ii. *p.* 749.

more

more dreadful than that of the deepeſt foreſts; for to man, trees are, at leaſt, viſible objects: More ſolitary and naked, more loſt in an unlimited void, he every where beholds ſpace ſurrounding him as a tomb: The light of the day, more diſmal than the darkneſs of night, ſerves only to give him a clearer view of his own wretchedneſs and impotence, and to conceal from his view the barriers of the void, by extending around him that immenſe abyſs which ſeparates him from the habitable parts of the earth; an abyſs, which, in vain, he ſhould attempt to traverſe; for hunger, thirſt, and ſcorching heat, haunt every moment that remains to him between deſpair and death.

The Arab, however, by the aſſiſtance of his camel, has learned to ſurmount, and even to appropriate, theſe frightful intervals of Nature. They ſerve him for an aſylum, they ſecure his repoſe, and maintain his independence. But man never uſes any thing without abuſe? This ſame free, independent, tranquil, and even rich Arab, inſtead of regarding his deſerts as the ramparts of his liberty, pollutes them with his crimes. He traverſes them to carry off ſlaves and gold from the adjacent nations. He employs them for perpetrating his robberies, which unluckily he enjoys more than his liberty; for his enterpriſes are almoſt always ſucceſsful. Notwithſtanding the vigilance of his neighbours, and the ſuperiority of their ſtrength, he eſcapes their purſuit,

ſuit, and carries off, with impunity, all that he ravages from them. An Arab, who gives himſelf up to this kind of terreſtrial piracy, is early accuſtomed to the fatigues of travelling, to want of ſleep, and to endure hunger, thirſt, and heat. With the ſame view, he inſtructs, rears, and exerciſes his camels. A few days after their birth *, he folds their limbs under their belly, forces them to remain on the ground, and, in this ſituation, loads them with a pretty heavy weight, which is never removed but for the purpoſe of replacing a greater. Inſtead of allowing them to feed at pleaſure, and to drink when they are dry, he begins with regulating their meals, and makes them gradually travel long journeys, diminiſhing, at the ſame time, the quantity of their aliment. When they acquire ſome ſtrength, they are trained to the courſe. He excites their emulation by the example of horſes, and, in time, renders them equally ſwift, and more robuſt †. In

* The young camels, ſoon after birth, are obliged to lie on the ground, with their four legs folded under their belly, for fifteen or twenty days, in order to inure them to this poſture They never lie in another poſition. To learn them temperance and abſtinence, they are then allowed very little milk; and, by this practice, they are trained to continue eight or ten days without drinking: And, as to victuals, it is aſtoniſhing that ſo large an animal ſhould live on ſo ſmall a quantity of food; *Voyage de Chardin, tom.* ii. *p.* 28.

† The dromedary is particularly remarkable for ſwiftneſs. The Arabs ſay, that he can travel as far in one day as one of their beſt horſes can do in eight or ten. The *Beka*, who conducted us to Mount Sinai, was mounted on one of theſe camels, and

In fine, after he is certain of the ſtrength, fleetneſs, and ſobriety of his camels, he loads them both with his own and their food, ſets off with them, arrives unperceived at the confines of the deſert, robs the firſt paſſengers he meets, pillages the ſolitary houſes, loads his camels with the booty, and, if purſued, he is obliged to accelerate his retreat. It is on theſe occaſions that he unfolds his own talents and thoſe of the camels. He mounts one of the fleeteſt *, conducts the troop, and makes them travel night and day, without almoſt either ſtopping, eating, or drinking, and, in this manner, he eaſily performs a journey of three hundred leagues in eight days †. During

and often amuſed us with the great fleetneſs of the animal on which he rode. He quitted our caravan to reconnoitre another, which was ſo diſtant, that we could hardly perceive it, and returned to us in leſs than a quarter of an hour; *Shaw's Travels.*—A kind of camels are reared in Arabia for the purpoſes of the courſe. They trot ſo fleetly, that a horſe cannot keep up with them, unleſs at a gallop; *Voyage de Chardin, tom.* ii. *p.* 28.

* The dromedaries are ſo fleet that they march thirty-five or forty leagues a day, and continue at this rate for eight or ten days through the deſert, and eat extremely little. They are uſed by the Arabs of Numidia and the Lybian Africans as poſt horſes, when a long journey is neceſſary; they likewiſe mount theſe animals in the time of combat; *L'Afrique de Marmol, tom.* i. *p.* 49.—The true dromedary is much lighter and ſwifter than the other camels; he can travel a hundred miles in a day, and continue at the ſame rate, acroſs the deſerts, with very little food, for ſeven or eight days; *L'Afrique d'Ogilby, p.* 12.

† The dromedaries are ſmaller, more ſlender, and fleeter than

During this period of motion and fatigue, his camels are perpetually loaded, and he allows them, each day, one hour only for repofe, and a ball of pafte. They often run in this manner nine or ten days, without finding water *; and when, by chance, there is a pool at fome diftance, they fcent the water half a league off †. Thirft makes them double their pace, and they drink

than the other camels, and are ufed only for carrying men. They have a fine foft trot, and eafily accomplifh forty leagues a-day. The rider has only to keep a firm feat; and fome people, for fear of falling, are tied on; *Relation de Thevenot, tom.* i. *p.* 312.

* The camel can difpenfe with drinking during four or five days. A fmall quantity of beans and barley, or rather fome morfels of pafte made of flour, are fufficient for his daily nourifhment. This fact I often experienced in my journey to Mount Sinai. Though each of our camels carried feven quintals, we travelled ten, and fometimes fifteen hours a day, at the rate of two and a half miles every hour; *Shaw's Travels.* —Adeo fitim cameli tolerant, ut potu abfque incommodo diebus quindecim abftinere poffint. Nociturus alioquin fi camelarius triduo abfoluto equam illis porrigat, quod fingulis quinis aut novenis diebus confueto more potentur vel urgente neceffitate quindenis; *Leon. Afric. Defcript. Africæ, vol.* ii. *p.* 749. —The patience with which the camels fuffer thirft is truly admirable. The laft time I travelled the deferts, which the caravan did not clear in lefs than fixty-five days, our camels were once nine days without drink; becaufe, during all this time, we found no water; *Voyage de Tavernier, tom.* i. *p.* 162.

† We arrived at a hilly country: At the foot of the hills were large pools. Our camels, which had paffed nine days without drink, fmelled the water at the diftance of half a league. They inftantly began their hard trot, which is their mode of running, and, entering the pools in troops, they firft troubled the water, &c. *Tavernier, tom.* i. *p.* 202.

as much at once as ſerves them for the time that is paſt, and as much to come; for their journeys often laſt ſeveral weeks, and their abſtinence continues an equal time.

In Turkey, Perſia, Arabia, Egypt, Barbary, &c. all the articles of merchandize are carried by camels *. Of all carriages, it is the cheapeſt and moſt expeditious. The merchants and other paſſengers unite in a caravan, to prevent the inſults and robberies of the Arabs. Theſe caravans are often very numerous, and are always compoſed of more camels than men. Each camel is loaded in proportion to his ſtrength; and, when overloaded †, he refuſes to march, and continues lying till his burden is lightened. The large camels generally carry a thouſand, or

* The camels are very commodious for carrying baggage and merchandize at a ſmall expence.——Their ſteps, as well as their journeys, are regulated.——Their food is cheap; for they live on thiſtles, nettles, &c.——They ſuffer drought two or three days; *Voyage d'Olearius, tom.* i. *p.* 552.

† When about to be loaded, at the command of their conductor they inſtantly bend their knees. If any of them diſobey, they are immediately ſtruck with a ſtick, or their necks are pulled down; and then, as if conſtrained, and complaining in their own manner, they bend their knees, put their bellies on the earth, and remain in this poſture till they are loaded and deſired to riſe. This is the origin of thoſe large calloſities on the parts of their bellies, limbs, and knees, which reſt on the ground. If over-burdened, they give repeated blows with their heads to the perſon who oppreſſes them, and ſet up lamentable cries. Their ordinary load is double that which the ſtrongeſt mule can carry; *Voyage du P. Philippe, p.* 369.

even

even twelve hundred * pounds weight, and the ſmalleſt from ſix to ſeven hundred †. In theſe commercial travels, their march is not haſtened: As the route is often ſeven or eight hundred leagues, their motions and journeys are regulated. They walk only, and perform about from ten to twelve leagues each day. Every night they are unloaded, and allowed to paſture at freedom. When in a rich country or fertile meadow, they eat, in leſs than an hour ‡, as much as ſerves them to ruminate the whole night, and to nouriſh them during twenty-four hours. But they ſeldom meet with ſuch paſ-

* Some camels can carry loads of fifteen hundred pounds. But they are never burdened in this manner, unleſs when the merchants approach the places where the impoſts on goods are levied, which they mean partly to evade, by laying as much on one camel as was carried before by two. But, with this great load, they travel not above two or three leagues a day; *Voyage de Tavernier, tom.* ii. *p.* 335.

† In the Eaſt, the camel is called *a land ſhip*, on account of the great load he carries, which, for large camels, is generally twelve or thirteen hundred pounds; for there are two kinds, *the northern* and *the ſouthern*, as they are denominated by the Perſians. The latter, who travel only from the Perſic Gulf to Iſpahan, are much ſmaller than the others, and carry only about ſeven hundred pounds; but they bring as much if not more profit to their maſters, becauſe their food hardly coſts any thing. They march loaded in this manner, paſturing along the road, without bridle or halter; *Voyage de Chardin, tom.* ii. *p.* 27.

‡ Victum cameli parciſſimum, exiguique ſumptus ferunt, et magnis laboribus robuſtiſſime reſiſtunt. —— Nullum animal illius molis citius comedit; *Proſp. Alpin. Hiſt. Egypt. p.* 225.

tures; neither is this delicate food neceſſary for them. They even ſeem to prefer wormwood, thiſtles*, nettles, broom, caſſia †, and other prickly vegetables to the ſofteſt herbage. As long as they find plants to browſe, they eaſily diſpenſe with drink ‡.

Beſides, this facility of abſtaining long from drink proceeds not from habit alone, but is rather an effect of their ſtructure. Independent of the four ſtomachs, which are common to ruminating animals, the camels have a fifth bag, which ſerves them as a reſervoir for water. This fifth ſtomach is peculiar to the camel. It is ſo large as to contain a vaſt quantity of water, where it remains without corrupting, or mixing with the other aliments. When the animal is preſſed with thirſt, and has occaſion for water to macerate his dry food in ruminating, he makes part of this water mount into his

* When the camels are unloaded, they are allowed to go in queſt of briars or brambles.——Though the camel is a large animal, he eats little, and is content with what he finds. He ſearches particularly for thiſtles, of which he is very fond; *Voyage de Tavernier, tom.* i. *p.* 162.

† Cameli paſcentes ſpinam in Egypto acutam, Arabicamque etiam vocatam Acaciam, in Arabia Petrea, atque juncum odoratum in Arabia deſerta, ubivis abſynthi ſpecies aliaſque herbas et virgulta ſpinoſa quæ in deſertis reperiuntur; *Proſp. Alpin. Hiſt. Egypt. part.* i. *p.* 226.

‡ When the camel is loaded, he lies on his belly, and never allows a greater burden to be put on his back than he is able to carry. If he finds herbage to eat, he can paſs ſeveral days without drink; *L'Afrique d'Ogilby, p.* 12.

paunch,

paunch, or even as high as the œſophagus, by a ſimple contraction of certain muſcles. It is by this ſingular ſtructure that the camel is enabled to paſs ſeveral days without drinking, and to take at a time a prodigious quantity of water, which remains in the reſervoir pure and limpid, becauſe neither the liquors of the body, nor the juices of digeſtion, can mix with it.

If we reflect on the diſſimilarities in this animal from other quadrupeds, we cannot doubt that his nature has been conſiderably changed by conſtraint, ſlavery, and perpetual labour. Of all animals, the camel is the moſt ancient, the completeſt, and the moſt laborious ſlave. He is the moſt ancient ſlave, becauſe he inhabits thoſe climates where men were firſt poliſhed. He is the moſt complete ſlave, becauſe, in the other ſpecies of domeſtic animals, as the horſe, the dog, the ox, the ſheep, the hog, &c. we ſtill find individuals in a ſtate of nature, and which have never ſubmitted to men. But the whole ſpecies of the camel is enſlaved; for none of them exiſt in their primitive ſtate of liberty and independence. Laſtly, he is the moſt laborious ſlave, becauſe he has never been nouriſhed for pomp, like moſt horſes, nor for amuſement, like moſt dogs, nor for the uſe of the table, like the ox, the hog, and the ſheep; becauſe he has always been made a beaſt of burden, whom men have never taken the trouble of yoking in machines, but have regarded the body of the animal as a

living carriage which they may load, or overload, even during ſleep; for, when hurried, the load is ſometimes not taken off, but he lies down to ſleep under it; with his legs folded *, and his body reſting on his ſtomach. Hence theſe animals perpetually bear the marks of ſervitude and pain. Upon the under part of the breaſt, there is a large calloſity as hard as horn, and ſimilar ones on the joints of the limbs. Though theſe calloſities are found on all camels, they exhibit a proof that they are not natural, but produced by exceſſive conſtraint and painful labour; for they are often filled with pus †. The breaſt and legs, therefore, are deformed by calloſities; the back is ſtill more disfigured by one or two bunches. The calloſities, as well as the bunches, are perpetuated by generation. As it is obvious, that the firſt deformity proceeds from the conſtant practice of forcing theſe animals, from their earlieſt age ‡, to lie on their ſtomach, with their limbs folded

* In the night, the camels ſleep on their knees, and ruminate what they have eaten during the day; *Voyage du P. Philippe, p.* 269.

† Having opened the calloſities on the legs to examine their ſtructure, which is a medium between fat and ligament, we found, in a ſmall camel, that ſome of them contained a collection of thick pus. The calloſity on the ſternum was eight inches long, ſix broad, and two thick. In it likewiſe we found a great deal of pus; *Mem. pour ſervir à l'Hiſt. des Animaux, part.* i. *p.* 74.

‡ As ſoon as the camel is brought forth, his four legs are folded under his body. After which, he is covered with a cloth, which hangs down to the ground, and on the borders of

folded under the body, and, in this ſituation, to bear both the weight of their own bodies, and that of the loads laid on their backs, we ought to preſume that the bunch or bunches have alſo originated from the unequal preſſure of heavy burdens, which would naturally make the fleſh, the fat, and the ſkin, ſwell; for theſe bunches are not oſſeous, but compoſed of a fleſhy ſubſtance ſimilar to that of a cow's udder*. Hence the calloſities and bunches ſhould be equally regarded as deformities produced by continual labour and bodily conſtraint; and, though at firſt accidental and individual, they are now become permanent and common to the whole ſpecies. We may likewiſe preſume, that the bag which contains the water, and is only an appendix to the paunch, has been produced by an unnatural extenſion of this viſcus. The animal, after ſuffering thirſt for a long time, by taking at once as much, and perhaps more water than the ſtomach could eaſily contain, this membrane would be gradually extended and dilated; in the ſame manner as we have ſeen the ſtomach of a ſheep extend in proportion to the quantity of its aliment. In ſheep fed with grain, the ſtomach is very ſmall;

of which a quantity of ſtones are laid, to prevent him from riſing, and in this poſition he remains fifteen or twenty days. He is ſerved with milk but very ſparingly, in order to accuſtom him to drink little; *Voyage de Tavernier, tom.* i. *p.* 161.

* The fleſh of the camel is inſipid, eſpecially that of the bunch, the taſte of which reſembles that of a fat cow's udder; *L'Afrique de Marmol, tom.* i. *p.* 50.

but

but becomes very large in thofe fed with herbage alone.

Thefe conjectures would be either fully confirmed or deftroyed, if we had wild camels to compare with the domeftic. But thefe animals no where exift in a natural ftate, or, if they do, no man has obferved or defcribed them. We ought to fuppofe, therefore, that every thing good and beautiful belongs to Nature, and that whatever is defective and deformed in thefe animals proceeds from the labour and flavery impofed on them by the empire of man. Thefe inoffenfive creatures muft fuffer much; for they utter the moft lamentable cries, efpecially when overloaded. But, though perpetually oppreffed, their fortitude is equal to their docility. At the firft fignal*, they bend their knees and lie down to be loaded †, which faves their conductor the trouble

* The camels are fo obedient to their mafters, that, when he wants to load or unload them, by a fingle word or fignal, they inftantly lie down on their bellies. Their food is fcanty, and their labour great; *Cofmog. du Levant, par Thevet, p.* 74.— They are accuftomed to lie down to be loaded, by having their legs folded under them when very young; and their obedience is fo prompt as to excite admiration. Whenever the caravan arrives at the place of encampment, all the camels which belong to one mafter range themfelves fpontaneoufly in a circular form, and lie down on their four legs; fo that, by loofing a cord which binds the bales, they gently fall down on each fide of the animal. When the time of loading arrives, the camels come and lie down between the bales, and, after they are fixed, rife foftly with their load. This exercife they perform in a fhort time, and without the fmalleft trouble or noife; *Voyage de Tavernier, tom.* i. *p.* 160.

† The camels, when about to be loaded, lie down on their four

trouble of raiſing the goods to a great height. As ſoon as they are loaded, they riſe ſpontaneouſly, and without any aſſiſtance. One of them is mounted by their conductor, who goes before, and regulates the march of all the followers. They require neither whip no ſpur. But, when they begin to be tired, their courage is ſupported, or rather their fatigue is charmed, by ſinging, or by the ſound of ſome inſtrument *. Their conductors relieve each other in ſinging; and, when they want to prolong the journey †, they give the

four legs, and then riſe with their burden; *Voyage de la Boulaie-le-Gouz, p.* 255.—The camels lie down to be loaded or unloaded, and riſe when deſired; *Relation de Thevenot, tom.* i. *p.* 312.

* The camels rejoice at the harmonious ſound of the voice, or of ſome inſtrument. . . . . The Arabs uſe timbrels, becauſe whipping does not make the animals advance. But muſic, and particularly that of the human voice, animates and gives them courage; *Voyage d'Olearius, tom.* i. *p.* 552.—When their conductor wants to make his camels perform extraordinary journeys, inſtead of chaſtiſing, he encourages them with a ſong; and, though they had formerly ſtopt, and refuſed to proceed farther, they now go on cheerfully, and quicker than a horſe when puſhed with the ſpur; *L'Afrique de Marmol, tom.* i. *p.* 47.—The maſter conducts his camels by ſinging, and, from time to time, blowing his whiſtle. The more he ſings, and the louder he blows, the animals march the quicker; and, when he ceaſes to ſing, they ſtop. Their conductors relieve each other by ſinging alternately, &c. *Voyage de Tavernier, tom.* i. *p.* 163.

† It is remarkable, that the camels learn to march by a kind of ſinging; for they proceed quickly or ſlowly, according to the ſound of the voice. In the ſame manner, when their maſters want an extraordinary journey performed, they know

the animals but one hour's reſt; after which, reſuming their ſong, they proceed on their march for ſeveral hours more, and the ſinging is continued till they arrive at another reſting-place, when the camels again lie down; and their loads, by unlooſing the ropes, are allowed to glide off on each ſide of the animals. Thus they ſleep on their bellies in the middle of their baggage, which, next morning, is fixed on their backs with equal quickneſs and facility as it had been detached the evening before.

The calloſities and tumours on the breaſt and legs, the contuſions and wounds of the ſkin, the complete falling off of the hair, hunger, thirſt, and meagerneſs, are not the only inconveniences to which theſe animals are ſubjected: To ſuffer all theſe evils they are prepared by caſtration, which is a misfortune greater than any other they are obliged to undergo. One male is only left for eight or ten females*; and the labouring camels are generally geldings. They are unqueſtionably weaker than unmutilated males; but they are more tractable, and at all ſeaſons ready for ſervice. While the former are not only unmanageable, but almoſt furious†, during the rutting

know the tunes which the animals love beſt to hear; *Voyage de Chardin, tom.* ii. *p.* 28.

* The Africans geld all their camels which are deſtined to carry burdens, and only one entire male is left for ten females; *L'Afrique de Marmol, tom.* i. *p.* 48.

† In the rutting ſeaſon, the camels are extremely troubleſome. They fret and foam, and bite every perſon who approaches

ting ſeaſon, which laſts forty days *, and returns annually in the ſpring †. It is then ſaid, that they foam continually, and that one or two red veſicles, as large as a hog's bladder, iſſue from their mouths ‡. In this ſeaſon, they eat little, attack and bite animals, and even their own maſ-

proaches them, and for that reaſon they are muzzled; *Relation de Thevenot, tom.* i. *p.* 222.—When the camels are in ſeaſon, thoſe who have the charge of them are obliged to muzzle them, and to be much on their guard; for the animals are miſchievous, and even furious; *Voyage de Jean Ovington, tom.* i. *p.* 222.

* The camels, in the ſeaſon of love, are dangerous. This ſeaſon continues forty days, and, when paſt, they reſume their ordinary mildneſs; *L'Afrique de Marmol, tom.* i. *p.* 49.

† The male camels, which, in all other ſeaſons, are extremely gentle and tractable, become furious in the ſpring, which is the time of their copulating. Like the cats, the camels generally perform this operation during the night. The ſheath of their penis then lengthens, as happens to all animals which lie much on their bellies. At all other times, it is more contracted and inclined backward, that they may diſcharge their urine with more eaſe; *Shaw's Travels.*—In the month of February, the camels come in ſeaſon, and the males are ſo furious that they foam inceſſantly at the mouth; *Voyage de la Boulaie-le-Gouz, p.* 256.

‡ When the camel is in ſeaſon, he continues forty days without eating or drinking; and he is then ſo furious, that, unleſs prevented, he bites every perſon who comes near him. Whereever he bites, he carries off the piece; and from his mouth there iſſues a white foam, accompanied with two bladders, which are large, and blown up like the bladder of a hog; *Voyage de Tavernier, tom* i. *p.* 161.—The camels, when in ſeaſon, live forty-two days without food; *Relat. de Thevenot, tom.* ii. *p.* 222.— 'Veneris furore diebus quadraginta permanent famis 'patientes;' *Leon. Afric. vol.* ii. *p.* 748.—In the rutting ſeaſon, which laſts five or ſix weeks, the camel eats much leſs than at any other time; *Voyage de Chardin, tom.* ii. *p.* 28.

ters,

ters, to whom, at all other times, they are very ſubmiſſive. Their mode of copulating differs from that of all other quadrupeds; for the female, inſtead of ſtanding, lies down on her knees, and receives the male in the ſame poſition that ſhe repoſes, or is loaded *. This poſture, to which the animals are early accuſtomed, becomes natural, ſince they aſſume it ſpontaneouſly in coition. The time of geſtation is near twelve months †, and, like all large quadrupeds, the females bring forth only one at a birth. Her milk is copious and thick; and, when mixed with a large quantity of water, affords an excellent nouriſhment to men. The females are not obliged to labour, but are allowed to paſture and

* When the camels copulate, the female lies down in the ſame manner as when ſhe is about to be loaded. Some of them go thirteen months with young; *Relation de Thevenot, tom.* ii. *p.* 23.—The female receives the male lying on her belly; *Voyage de Jean Ovington, p.* 223.—It is remarkable, that, when theſe animals copulate, the females lie on their bellies in the ſame manner as when they are loading. The time of their geſtation is from eleven to twelve months; *Voyage de Chardin, tom.* ii. *p.* 28.—It is true, that the females go with young twelve months: But thoſe who aſſert, that, during the time of coition, the male turns his crupper to the female, are deceived. This error proceeds from the circumſtance of his diſcharging his urine backward, by placing the penis between the two hind legs. But, in copulating, the female lies on her belly, and receives the male in that poſition; *Voyage de Olearius, tom.* i. *p.* 553.

† The females go with young near twelve months, or from one ſpring to the following; *Shaw's Travels.*

produce at full liberty*. The advantages derived from their produce and their milk †, are perhaps ſuperior to what could be drawn from their work. In ſome places, however, moſt of the females are caſtrated ‡, in order to fit them for labour; and it is alleged, that this operation, inſtead of diminiſhing, augments their ſtrength, vigour, and plumpneſs. In general, the fatter camels are, they are the more capable of enduring great fatigue. Their bunches ſeem to proceed from a redundance of nouriſhment; for, during long journeys, in which their conductor is obliged to huſband their food, and where they often ſuffer much hunger and thirſt, theſe bunches gradually diminiſh, and become ſo flat, that the place where they were is only perceptible by the length of the hair, which is always longer on theſe parts than on the reſt of the back. The meagerneſs of the body augments in proportion as the bunches decreaſe. The Moors, who tranſport all articles of merchandiſe from Barbary and Numidia, as far as Æthiopia, ſet out with their camels well laden, and when they are very fat

* Camelos fœminas intactas propter earum lac ſervant, eas omni labore ſolutas vagari permittentes per loca ſylveſtria paſcentes, &c. *Proſp. Alpin. Hiſt. Ægypt. part.* i. *p.* 226.

† Of the camel's milk, ſmall cheeſes are made, which are very dear, and highly eſteemed among the Arabs; *Voyage du P. Philippe, p.* 370.

‡ The males are caſtrated; and the females ſometimes undergo a ſimilar operation, which renders them ſtronger and larger; *Wotton, p.* 82.

and

and vigorous *; and bring back the ſame animals ſo meager, that they commonly ſell at a low price to the Arabs of the Deſert, to be again fattened.

We are told by the ancients, that camels are in a condition for propagating at the age of three years †. This aſſertion is ſuſpicious; for, in three years, they have not acquired one half of their growth ‡. The penis of the male, like that of the bull, is very long, and very ſlender ‖. During erection, it ſtretches forward, like that of all other quadrupeds; but, in its ordinary ſtate, the ſheath is drawn backward, and the urine is diſcharged from between the hind legs §; ſo that

* When the camels begin their journey, it is neceſſary that they ſhould be fat; for, when this animal has travelled forty or fifty days without having barley to eat, the fat of the bunches begins to diminiſh, then that of the belly, and, laſtly, that of the limbs; after which he is no longer able to carry his load. . . . The caravans of Africa, which travel to Æthiopia, never think of bringing back their camels; becauſe they tranſport no heavy goods from that country; and, when they arrive, they ſell their meager animals; *L'Afrique de Marmol, tom.* i. *p.* 49.—Camelos macilentos, dorſique vulneribus ſaucios, vili pretio Deſertorum incolis ſaginandos divendunt; *Leon. Afric. Deſcript. Africæ, vol.* ii. *p.* 479.

† Incipit mas et fœmina coire in trimatu; *Ariſt. Hiſt. Anim. lib.* v. *cap.* 14.

‡ In the year 1752, we ſaw a female camel of three years of age. . . . She had not acquired above one half of her ſtature; *Hiſt. Nat. des Animaux, par Meſ. Arnault de Nobleville et Salerne, tom.* iv. *p.* 126. *et* 130.

‖ Though the camel is a large animal, his penis, which is at leaſt three feet long, is not thicker than the little finger of a man; *Voyage d'Olearius, tom.* i. *p.* 554.

§ The camels diſcharge their urine backward. Perſons unacquainted

that both males and females urine in the ſame manner. The young camel ſucks his mother twelve months *; but, when deſigned to be trained, in order to render him ſtrong and robuſt in the chaſe, he is allowed to ſuck and paſture at freedom during the firſt years, and is not loaded, or made to perform any labour, till he is four years of age †. He generally lives forty and ſometimes fifty years ‡, and the duration of his life is thus proportioned to the time of his growth. There is no foundation for what has been advanced by ſome authors, that he lives one hundred years.

By conſidering, under one point of view, all the qualities of this animal, and all the advantages derived from him, it muſt be acknowledged that he is the moſt uſeful creature which was ever ſubjected to the ſervice of man. Gold and ſilk conſtitute not the true riches of the Eaſt. The camel is the genuine treaſure of Aſia. He is more valuable than the elephant; for he may be ſaid to perform an equal quantity of labour at a

unacquainted with this circumſtance, are liable to have their clothes ſoiled with urine; *Coſmographie du Levant, par Thevet, p.* 74.—The camel diſcharges his urine backward; *Voyage de Villamont, p.* 688.

* Separant prolem a parente anniculam; *Ariſt. Hiſt. Anim. lib.* vi. *cap.* 26.

† The camels called *Hegin* by the Africans, are the largeſt; but they are never loaded till they are four years old; *L'Afrique de Marmol, tom.* i. *p.* 48.

‡ Camelus vivit diu, plus enim quam quadraginta annos; *Ariſt. Hiſt. Anim. lib.* vi. *cap.* 26.

twentieth part of the expence. Befides, the whole fpecies are fubjected to man, who propagates and multiplies them at pleafure. But he has no fuch dominion over the elephants, whom he cannot multiply, and the individuals of which he conquers with great labour and difficulty. The camel is not only more valuable than the elephant, but he is perhaps equal in utility to the horfe, the afs, and the ox, when their powers are united. He carries as much as two mules, though he eats as little, and feeds upon herbs equally coarfe, as the afs. The female furnifhes milk longer than the cow *. The flefh of young camels is as good and wholefome † as veal. Their hair is finer ‡ and more in requeft than the beft wool. Even their excrements are ufeful; for fal ammoniac is made of their urine, and their dung

* Parit in vere, et lac fuum ufque eo fervat quo jam conceperit; *Arift. Hift. Anim. lib.* vi. *cap.* 26.—Fœmina poft partum interpofito anno coit; *Id. lib.* v. *cap.* 14.

† The Africans and Arabs fill their pots and tubs with camels flefh, which is fried with greafe, and preferved in this manner during the whole year for their ordinary repafts; *L'Afrique de Marmol, tom.* i. *p.* 50.—Præter alia animalia quorum carnem in cibo plurimi faciunt, cameli in magno honore exiftunt; in Arabum principum caftris cameli plures unius anni aut biennes mactantur, quorum carnes avide comedunt, eafque odoratas, fuaves, atque optimas effe fatentur; *Profp. Alpin Hift. Ægypt. part.* i. *p.* 226.

‡ Socks are made of the camel's hair; and, in Perfia, fine girdles are made of it; fome of which, efpecially when white, coft two *tomans*, becaufe camels of this colour are rare; *Relation de Thevenot, tom.* ii. *p.* 223.

ferves

ſerves for litter* to themſelves, as well as to horſes, with which people frequently travel † in countries where no hay or ſtraw can be had. In fine, their dung makes excellent fewel. It burns freely ‡, gives as clear and nearly as hot a flame as dry wood, and is of great uſe in the deſerts, where not a tree is to be found, and where, for want of combuſtible materials, fire is as ſcarce as water §.

SUPPLEMENT.

HAVING little to add to what has been ſaid with regard to the camel and dromedary, we

* Their own dung ſerves them for litter. For this purpoſe it is expoſed to the ſun during the day, which dries it ſo completely, that it crumbles down into a kind of powder, which is carefully ſpread for litter; *Relation de Thevenot, p.* 73.

† The ancients tell us, without any foundation, that the camels have a great antipathy to horſes. I could not learn, ſays Olearius, why Pliny, after Xenophon, ſhould advance, that camels have an averſion to horſes. When I mentioned it to the Perſians, they laughed at me. . . . There is hardly a caravan in which there are not camels, horſes, and aſſes, all lodged promiſcuouſly together, without diſcovering the ſmalleſt averſion or animoſity againſt each other; *Voyage d'Olearius, tom.* i. *p.* 553.

‡ The camels dung left by ſome caravans, which had gone before us, generally ſerved us for fewel; for, after being expoſed a day or two to the ſun, it is eaſily inflamed, and burns as clear and with as ſtrong a heat as dried wood or charcoal; *Shaw's Travels.*

§ Hiſt. Nat. des Animaux, par Meſſ. Arnault de Nobleville et Salerne, tom. iv. p. 313.

 ſhall

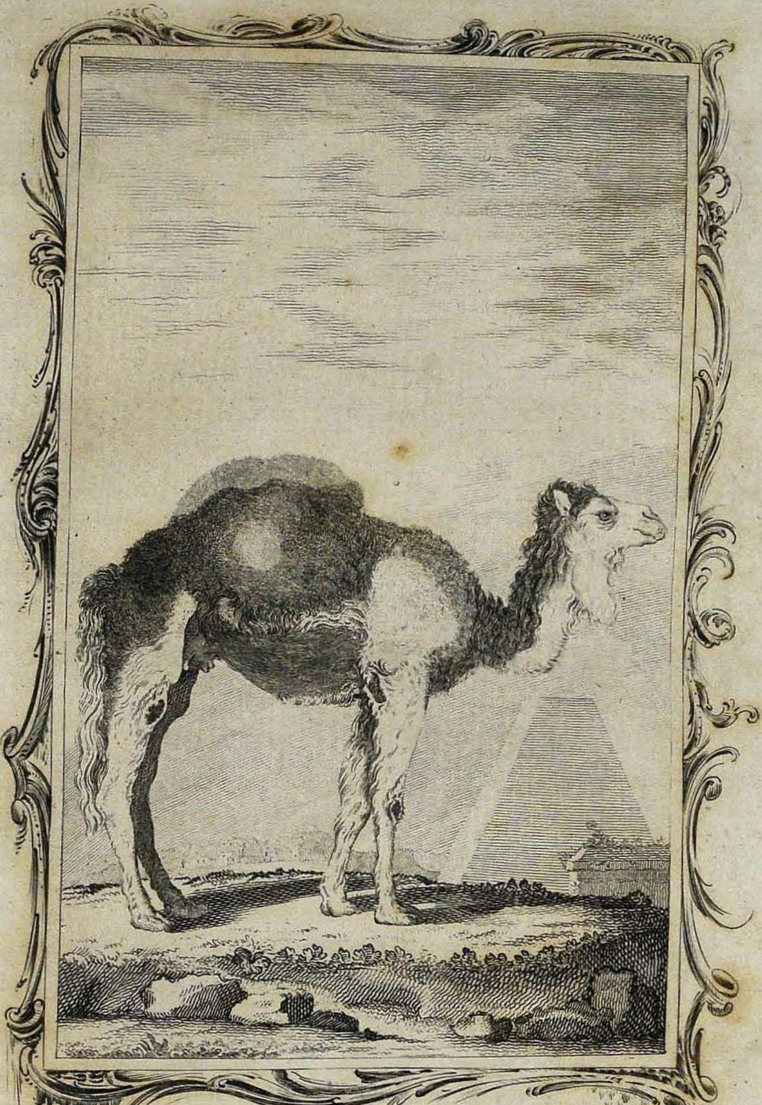
ſhall content ourſelves with quoting a paſſage from M. Niebuhr's deſcription of Arabia, p. 144.

'In the country of Iman, moſt of the camels 'are of a middle ſtature, and of a bright brown 'colour; ſome of them, however, are large, 'heavy, and of a deep brown colour. When 'about to copulate, the female lies down on her 'legs; and her fore legs are tied, to pre- 'vent her from riſing. The male ſits on his 'poſteriors like a dog, with his two fore feet 'reſting on the ground. He ſeems to be colder 'and more indifferent than any other animal; 'for he often requires to be teazed a long time 'before the ardour of love is excited. When 'the operation is finiſhed, the female is ſuddenly 'raiſed and forced to walk. The ſame thing, 'it is ſaid, takes place in Meſopotamia, Natolia, 'and probably every where elſe.'

I remarked, that camels had been tranſported to the Canaries, Antilles, and Peru; but that they had not ſucceeded in any part of the New World. Dr. Brown, in his Hiſtory of Jamaica, affirms, that he ſaw dromedaries there, which the Engliſh, in former times, had tranſported thither in great numbers, and that, though they ſtill ſubſiſt, they are of little uſe; becauſe the inhabitants are ignorant of the proper manner of feeding and treating theſe animals. They, however, multiply in all theſe climates, and I doubt not but they might produce even in France. We ſee from the Gazette of June 9, 1775, that M. Brin-

kenof

Plate CLXVIII.



A Bell Sculpt

DROMEDARY.

Plate CLXIX.

CAMEL.

kenof having made a male and female camel copulate in his territories near Berlin, obtained, on the 24th day of March 1775, after a period of twelve months, a young camel, which was healthy and vigorous. This fact confirms what I said concerning the production of dromedaries and camels at Dresden; and I am persuaded, that, if we had Arabian servants, who know how to manage these animals, we might soon render this species domestic, which I consider as the most useful of all quadrupeds.

TANJORE MAHARAJA SERFOJI'S SARASVATI MAHAL

The BUFFALO *, the BONASUS †, the URUS ‡, the BISON ||, and the ZEBU §.

THE buffalo, though now common in Greece, and domeſtic in Italy, was unknown both to the ancient Greeks and Romans; for he has

* This animal has no name either in Greek or Latin. In modern Latin, *Bubalus*, *Buffelus*; in Italian, *Bufalo*; in German, *Buffel*; at Congo, according to Dapper, *Empakaſſa*, or *Pakaſſa*; and at the Cape of Good Hope, according to Kolbe, *Gu-Aroho*.

Bos bubalus, cornibus reſupinatis, intortis, antice planis; *Linn. Syſt. Nat. p.* 99.

Buffelus vel Bubalus vulgaris; *Johnſton de Quad p.* 38. *tab.* 20.

Buffle; *Kolbe Deſcript. du Cap de Bonne-Eſperance, tom.* iii. *p.* 25. *pl. at p.* 54. *fig.* 3. *Note*, I have here quoted Johnſton and Kolbe ſolely becauſe the figures they have given of the buffalo are not ſo bad as thoſe of other authors.

† Bonaſus quoque e ſylveſtribus cornigeris enumerandus eſt; *Ariſt. Hiſt. Anim. lib.* ii. *cap.* 1. . . . Sunt nonnulla quæ ſimul biſulca ſunt, et jubam habeant et cornua bina, orbem inflexu mutuo colligentia, gerant, ut bonaſus, qui in Pœonia terra et Media gignitur; *Idem. Ibid.* . . . Bonaſus etiam interiora omnia bubus ſimilia continet; *Idem. lib.* ii. *cap.* 16. . . Bonaſus gignitur in terra Pœonia, monte Meſſapo, qui Pœoniæ et Mediæ terræ collimitium eſt, et Monapios a Pœonibus appellatur, magnitudine tauri, ſed corpore quam bos latiore: Brevior enim et in latera auctior eſt. Tergus diſtentum ejus locum ſeptem accubantium occupat; cætera, forma bovis ſimilis eſt, niſi quod cervix jabata armorum tenus ut equi eſt, ſed

has no name in the languages of these people. Even the word *Buffalo* indicates a foreign origin; for it has no root either in Greek or Latin. In a word, this animal is a native of the warm regions

sed villo molliore quam juba equina et compositiore; color pili totius corporis flavus, juba prolixa et ad oculos usque demissa et frequenti colori inter cinereum et rufum, non qualis equorum quos partos vocant est, sed villo supra squalidiore, subter lanario. Nigri aut admodum rufi nulli sunt. Vocem similem bovi emittunt; cornua adunca in se flexa et pugnæ inutilia gerunt, magnitudine palmari, aut paulo majora, amplitudine non multo arctiore quam ut singula semi-sextarium capiant nigritie proba. Antiæ ad oculos usque demissæ, ita ut in latus potius quam ante pendeant. Caret superiore dentium ordine, ut bos et reliqua cornigera omnia. Crura hirsuta atque bisulca habet; caudam minorem quam pro sui corporis magnitudine, similem bubulæ. Excitat pulverem et fodit, ut taurus. Tergore contra ictus prævalido est. Carnem habet gustu suavem: Quamobrem in usu venandi est. Cum percussus est, fugit, nisi defatigatus nusquam consistit. Repugnat calcitrans et proluviem alvi vel ad quatuor passus projiciens, quo præsidio facile utitur, et plerumque ita adurit, ut pili insectantium canum absumantur. Sed tunc ea vis est in fimo, cum bellua excitatur et metuit: Nam si quiescit, nihil urere protest. Talis natura et species hujus animalis est. Tempore pariendi universi in montibus enituntur; sed priusquam fœtum edant, excremento alvi circiter eum locum in quo pariunt, se quasi vallo circumdant et muniunt, largam enim quandam ejus excrementi copiam hæc bellua egerit; *Idem. lib.* ix. *cap.* 45. *Traduction de Theodore Gaza.*

Bos bonasus, cornibus in se flexis, juba longissima; *Linn. Syst. Nat. p.* 99.

‡ Urus; *Caii Jul. Cæs. Comment. lib.* vi. *c.* 5. The *aurochs* of the Germans.

|| Bison jubatus Plinii et aliorum.

Bos bison, cornibus divaricatis, juba longissima, dorso gibboso; *Linn. Syst. Nat. p.* 99.

§ Petit

regions of Africa and the Indies, and was not tranſported and naturalized in Italy till about the ſeventh century. The moderns have improperly applied to him the name *bubalus*, which, indeed, denotes an African animal, but very different from the buffalo, as might be ſhewn from many paſſages of ancient authors. If the bubalus were to be referred to a particular genus, he ſhould rather belong to that of the antilope than to that of the ox. Belon, having ſeen at Cairo a ſmall ox with a bunch on its back, which differed from the buffalo and common ox, imagined that it might be the bubalus of the ancients. But, if he had carefully compared the characters given by the ancients to the bubalus, with thoſe of this ſmall ox, he would have diſcovered his error. Beſides, we are enabled to ſpeak of it with certainty; for we have ſeen it alive; and, after comparing the deſcription we have given of it with that of Belon, we cannot heſitate in pronouncing it to be the ſame animal. It was exhibited at the fair of Paris in the year 1752, under the name of *zebu*, which we have adopted to denote this animal, becauſe it is a particular race of the ox, and not a ſpecies of the buffalo or bubalus.

§ Petit bœuf d'Afrique; *Obſ. de Belon, p.* 118. where there is a figure of it.

Guabex in Barbary, according to Marmol; *Bekker el Waſh*, that is *wild ox*, among the Arabs; *Shaw's travels*.

Ariſtotle,

Ariſtotle, when treating of oxen, mentions not the common ox, but only remarks, that, among the *Arachotas* in India, there are wild oxen, which differ from the domeſtic kind as much as the wild boar differs from the common hog. But, in another place, as quoted above in the notes, he gives a deſcription of a wild ox in Pœonia, a province bordering on Macedonia, which he calls *bonaſus*. Thus the common ox and the bonaſus are the only animals of this kind mentioned by Ariſtotle; and, what is ſingular, the bonaſus, though fully deſcribed by this great philoſopher, was unknown to the Greek and Latin naturaliſts who wrote after him; for they have all copied him verbatim on this ſubject: So that, at preſent, we only know the name *bonaſus*, without being able to diſtinguiſh the animal to which it ought to be applied. If we conſider, however, that Ariſtotle, when ſpeaking of the wild oxen of temperate climates, mentions the bonaſus only, and that, on the contrary, the Greeks and Latins of after-ages take no notice of the bonaſus, but point out theſe wild oxen under the appellations of *urus* and *biſon*, we will be induced to think that the bonaſus muſt be either the one or the other of theſe animals; and, indeed, by comparing what Ariſtotle has ſaid of the bonaſus, with what we know concerning the biſon, it is probable that theſe two names denote the ſame animal. The urus is firſt mentioned by Julius Cæſar; Pliny and Pauſanias are alſo

the

the firſt who announced the biſon. From the time of Pliny, the name *bubalus* has been indiſcriminately applied to the urus or the biſon. Confuſion always augments as time advances. To the bonaſus, bubalus, urus, and biſon, have been added the *catopleba*, the *thur*, the bubalus of Belon, the Scottiſh and American biſons; and all our naturaliſts have made as many different ſpecies as they have found names. Here truth is ſo environed with darkneſs and error, that it will be difficult to elucidate this part of natural hiſtory, which the contrariety of evidence, the variety of deſcriptions, the multiplicity of denominations, the diverſity of places, the differences of languages, and the obſcurity of time, ſeemed to have condemned to perpetual darkneſs.

I ſhall firſt give my opinion on this ſubject, and afterwards produce the proofs of it.

1. The animal we call *buffalo* was unknown to the ancients.

2. The buffalo, now domeſtic in Europe, is the ſame as the domeſtic or wild buffalo of India and Africa.

3. The *bubalus* of the Greeks and Romans is neither the buffalo nor the ſmall ox of Belon, but the animal deſcribed in the Memoires of the *Barbary cow*, and which we call *bubalus*.

4. The ſmall ox of Belon, which we have ſeen, and diſtinguiſhed by the name *zebu*, is only a variety of the common ox.

5. The

5. The *bonaſus* of Ariſtotle is the ſame animal with the biſon of the Latins.

6. The *biſon* of America might proceed originally from the European biſon.

7. The *urus* or *aurochs* is the ſame animal with the common bull in its natural and wild ſtate.

8. The biſon differs from the aurochs by accidental varieties only; and, conſequently, it is, as well as the aurochs, of the ſame ſpecies with the domeſtic ox; ſo that I think I ſhall be able to reduce all the denominations, and all the pretended ſpecies both of ancient and modern naturaliſts, to three, namely, the ox, the buffalo, and the bubalus.

Some of the propoſitions I am about to lay down, will, I doubt not, appear to be mere aſſertions, particularly to thoſe who have been accuſtomed to ſtudy the nomenclators of animals, or have attempted to give liſts of them. There are none of theſe aſſertions, however, which I am not able to prove. But before entering into critical diſcuſſions, each of which requires particular propoſitions, I ſhall relate the facts and remarks which led me into this reſearch; and as they have ſatisfied myſelf, I hope they will be equally ſatisfactory to others.

Domeſtic animals differ, in many reſpects, from wild animals. Their nature, their ſize, and their form are more fluctuating, and ſubject to greater changes, eſpecially in the external

 parts

parts of the body. The influence of climate, which acts powerfully upon all Nature, exerts itself with greater efficacy upon captive than upon free animals. Food prepared by the hand of man, which is often ill chosen, and sparingly administered, joined to the inclemency of a foreign sky, produce, in the progress of time, alterations so deeply engraven that they become constant, and are transmitted to posterity. I pretend not to maintain, that this general cause of change is so powerful as to alter essentially the nature of beings, whose constitution is so permanently fixed as that of animals. But it transforms and masks their external appearance; it annihilates some parts, and gives rise to others; it paints them vith various colours; and, by its action on the temperament of the body, it has an influence on the dispositions, instincts, and other internal qualities. The modification of a single part, in a machine so perfect as that of an animal body, is sufficient to make the whole feel the effects of the alteration. It is for this reason that our domestic animals differ nearly as much in dispositions and instincts, as in figure, from those which enjoy their natural state of freedom. Of this the sheep affords a striking example. This species, in its present condition, could not exist without the care and defence of man; it is also much changed, and very inferior to its original species. But, not to depart from our chief object, we see how many alterations the ox has undergone,

undergone, from the combined effects of climate, food, and management, in a wild, and in a domestic state.

The bunch which some oxen carry between their shoulders, both in a domestic and wild state, is the most general and most remarkable variety. This race of oxen are denominated *bisons*; and, it has been imagined, till now, that they were of a different species from the common ox. But, as we are certain that these animals produce with the common kind, and that the bunch diminishes from the first generation, and disappears in the second or third, it is evident, that this bunch is only an accidental and variable character, which prevents not the bunched ox from belonging to the same species with our ox. Now, in the desert parts of Europe, there were, in ancient times, wild oxen, some of them with bunches, and others without bunches. Hence this variety seems to be natural, and to proceed from the abundance and more substantial quality of the food; for we remarked, when treating of the camels, that, when meager and ill fed, they have not even the least vestige of a bunch. The ox without a bunch was called *vrochs* and *turochs* in the language of the Germans, and, in the same language, the bunched ox was called *visen*. The Romans, who knew neither of these wild oxen till they saw them in Germany, adopted their German names. From *vrochs* they made *vrus*, and from *visen*, *bison*. They never imagined

imagined that the wild ox deſcribed by Ariſtotle, under the name of *bonaſus*, could be one or other of theſe oxen whoſe names they had Latinized.

The length of the hair is another difference between the aurochs and biſon. The neck, the ſhoulders, and the throat of the biſon, are covered with very long hair. But, in the aurochs, all theſe parts are covered with ſhort hair, ſimilar to that on the reſt of the body, except the front, which is covered with criſped hair. This difference of the hair, however, is ſtill more accidental than that of the bunch, and depends likewiſe on the food and the climate, as we have proved under the articles Goat, Sheep, Dog, Cat, Rabbit, &c. Thus, neither the bunch, nor the difference in the length of the hair, are ſpecific characters, but accidental varieties only.

A more extenſive variety than the other two ariſes from the figure of the horns; to which character naturaliſts have aſcribed more importance than it deſerves. They have not conſidered, that, in our domeſtic cattle, the figure, the ſize, the poſition, the direction, and even the number of the horns, vary ſo greatly, that it is impoſſible to aſcertain what is the real model of Nature. In ſome cows, the horns are much crooked, and hang ſo low as to be almoſt pendulous; in others, they are more erect, longer, and more elevated. There are entire races of ewes with ſometimes two, ſometimes four horns; and

there are races of cows without horns. Theſe external, or, as they may be called, acceſſory parts of the body, are as fluctuating as the colours of the hair, which, in domeſtic animals, are varied and combined in every poſſible manner. This difference in the figure and direction of the horns, which is ſo frequent, ought not, therefore, to be regarded as a diſtinctive character of ſpecies. It is, however, the only character which our naturaliſts have adopted in their ſpecies; and, as Ariſtotle, in his deſcription of the bonaſus, ſays, that its horns bended inwards, they have, from this conſideration alone, and without having ever ſeen the individual, ſeparated it from the reſt, and made it a diſtinct ſpecies. In this variation of the horns of domeſtic animals, we have confined our remarks to cows and ewes; becauſe the females are always more numerous than the males; and we every where ſee thirty cows or ewes for one bull or ram.

The mutilation of animals by caſtration ſeems to injure the individual only, and to have no influence on the ſpecies. It is certain, however, that this practice reſtrains Nature on the one hand, and weakens her on the other. A ſingle male, obliged to ſerve thirty or forty females, muſt be enfeebled; beſides, the ardour of love is unequal. It is cool in the male, who exerts himſelf beyond the bounds of Nature, and too ardent in the female, whoſe enjoyment is limited

ed to an inſtant. Of courſe, the offspring muſt be chiefly tinctured with the feminine qualities; more females will be produced than males; and even the males will partake more of the mother than the father. This is unqueſtionably the reaſon why more girls than boys are brought forth in thoſe countries where the men have a great number of wives. On the contrary, in all countries where the men are allowed but one wife, more males are produced than females. It is true, that, in domeſtic animals, the fineſt males are ſelected to become the fathers of an offspring ſo numerous. The firſt productions from theſe males will be ſtrong and vigorous. But, in proportion to the number of copies taken from the ſame mould, the original impreſſion of Nature will be deformed, or at leaſt rendered leſs perfect. The race muſt, therefore, degenerate, and become more feeble. This, perhaps, is the reaſon why more monſters are produced among domeſtic than wild animals, where the number of males is equal to that of the females. Beſides, when one male is obliged to ſerve many females, they have not the liberty of following their own taſte. They are deprived of that gaiety, and thoſe ſoft emotions which proceed from ſpontaneous pleaſures. The fire of their love is half extinguiſhed; and they languiſh, waiting for the cold approaches of a male whom they have not ſelected, who is often not accommodated to them, and who always flatters leſs than one that

is obliged to careſs, in order to obtain a preference. Theſe melancholy and taſteleſs amours muſt give riſe to productions equally diſmal and inſipid; beings who never have that courage, ſpirit, and ſtrength, which Nature can only beſtow on each ſpecies, by leaving all the individuals in full poſſeſſion of their powers, and, above all, of the liberty of choice in the intermixture of the ſexes. We learn from the example of horſes, that croſſed races are always the moſt beautiful. We ought not, therefore, to confine our female cattle to a ſingle male of their own country, who already has too much reſemblance to his mother, and who, conſequently, inſtead of improving, continues to degrade the ſpecies. Man, in this article, prefers his convenience to every other advantage. We never think of improving or of embelliſhing Nature; but we ſubmit to her operations, that we may enjoy her in a more arbitrary manner. The males conſtitute the glory of each ſpecies. They have more courage, fire, and obſtinacy. A great number of males in our flocks would render them leſs tractable, and more difficult to manage. In thoſe ſlaves of the moſt abject kind, it is even neceſſary to depreſs every head that offers to exalt itſelf.

To theſe cauſes of degeneration in domeſtic animals, we muſt ſtill add another, which alone has produced more changes than all the combined force of the others; I mean, the conſtant

 tranſportation

transportation of those animals from climate to climate. The ox, the sheep, the goat, have been carried to every habitable part of the globe. These species have been subjected to the influence of every climate, and have received impressions from every soil and every sky; so that it has become extremely difficult, amidst the number of changes they have undergone, to recognise those which are least removed from the prototype of Nature.

Having pointed out the general causes of the varieties among domestic animals, I shall now exhibit the particular proofs of what I advanced concerning the oxen and buffalos.

1. I remarked, *that the animal we now know by the name of buffalo, was unknown to the ancient Greeks and Romans.* This position is evident; for in none of their authors is there any description, or even name, which can be applied to the buffalo. Besides, we learn from the annals of Italy, that the first buffalo was transported thither about the end of the sixth century *.

2. *The buffalo, now domestic in Europe, is the same with the wild or domestic buffalo of India and Africa.* Of this no other proof is necessary than a comparison of our description of the buffalo, which was made from the live animal, with the notices given by travellers of the buffalos in Persia †, Mogul ‡, Bengal ||,

* Ann. 595. Voyage de Misson, tom. iii. p. 54. † Voyage de Tavernier, tom. i. pag. 41. et 298. ‡ Relation de Thevenot, page 11. || Voyage de l'Hullier, page 30.

Egypt,

Egypt *, Guiney †, and the Cape of Good Hope ‡. It is eaſy to perceive, that, in all theſe countries, this animal is the ſame, and differs from our buffalo only by very ſlight varieties.

3. *The bubalus of the Greeks and Latins is neither the buffalo, nor the ſmall ox of Belon, but the animal deſcribed in the Memoirs of the Academy of Sciences, under the name of the Barbary Cow.* The following facts will prove this poſition. Ariſtotle ‖ ranks the bubalus with the ſtag and fallow deer, and not with the ox §. In another place he mentions the bubalus along with the roe deer; and remarks, that he makes a bad defence with his horns, and that he flies from all ferocious animals. Pliny **, ſpeaking of the wild oxen of Germany, ſays, that it is only from ignorance that the vulgar give the

* Deſcript. de l'Egypte, par Maillet, tom. ii. p. 121.

† Voyage de Boſman, pag. 437.

‡ Deſcription du Cap de Bonne-eſperance, par Kolbe, tom. iii. p. 25.

‖ Genus id fibrarum cervi, damæ, bubali ſanguini deeſt; *Ariſt. Hiſt. Anim. lib.* iii. *cap.* 6.

§ Bubalis etiam capreiſque interdum cornua inutilia ſunt: Nam etſi contra nonnulla reſiſtant, et cornibus ſe defendant, tamen feroces pugnaceſque belluas fugiunt; *Idem, de Part. Animal. lib.* iii. *cap.* 11.

** Germania gignit inſignia boum ferorum genera, jubatos biſontes, excellentique vi et velocitate uros, quibus imperitum vulgus *bubalorum* nomen impoſuit; cum id gignat Africa; vituli potius cervive quadam ſimilitudine; *Plin. Hiſt. Nat. lib.* viii, *cap.* 15.

name of *bubalus* to theſe oxen; for the bubalus is an African animal, which reſembles, in ſome meaſure, a calf or a ſtag. Hence the bubalus is a timid creature, his horns are uſeleſs to him, and, to avoid the aſſaults of ferocious animals, he has no other reſource but flight; of courſe, he is nimble, and is related, by his figure, both to the cow and the ſtag. All theſe characters, none of which apply to the buffalo, are combined in the animal whoſe figure was ſent by Horatius-Fontana to Aldrovandus *, and of which the Gentlemen of the Academy † have likewiſe given a figure and deſcription, under the name of the *Barbary cow*; and they agree with me in thinking, that it is the bubalus of the ancients ‡. The zebu, or ſmall ox of Belon, has none of the characters of the bubalus; for the zebu differs as much from the bubalus as the ox from the antilope; and Belon is the only naturaliſt who regarded this ſmall ox as the bubalus of the ancients.

4. *The ſmall ox of Belon is only a variety of the common ox.* This poſition may be eaſily proved by ſimply referring to the figure of the animal given by Belon, Proſper Alpinus, and Edwards, and to our own deſcription of it. We have ſeen it alive: Its conductor told us, that it came from

* Aldrov. de Quad. Biſulc. p. 365.

† Mem. pour ſervir à l'Hiſt. des Animaux, part. ii. p. 24.

‡ This animal ſhould rather be regarded as the bubalus of the ancients, than the ſmall African ox deſcribed by Belon; *Id. ibid. p.* 26.

Africa,

Africa, where it was called *zebu*; that it was domeftic, and was ufed for riding. It is, indeed, a very mild and even a careffing animal. Its figure, though thick and fquat, is agreeable. It has, however, fo perfect a refemblance to the ox, that I can give no better idea of it, than by remarking, that if a handfome bull were viewed through a glafs which diminifhed objects one half, this contracted figure would be that of the zebu.

The defcription I made of this animal, in the year 1752, is inferted below in the note *. It

* This fmall ox has a perfect refemblance to that of Belon. Its crupper is round, and plumper than that of the common ox. It is fo gentle and familiar, that it licks the hand like a dog, and careffes every perfon who approaches. It is a very beautiful animal; and its intelligence feems to be equal to its docility. We were informed by its conductor, that it was brought from Africa, and that its age was twenty-one months. Its colour was white, mixed with yellow and a little red. All the legs were white. The hair on the fpine of the back, for about a foot wide, is black, and the tail of the fame colour. In the middle of this black band, there is on the crupper a fmall white ftreak, the hairs of which ftand erect like briftles. It had no mane, and there was very little hair on the tuft. The hair of the body is very fmooth and fhort. It was five feet feven inches in length, from the end of the muzzle to the origin of the tail, five feet one inch in circumference behind the fore legs, five feet fix inches at the middle of the body, and five feet one inch above the hind legs. The circumference of the head, taken before the horns, was two feet ten inches, and that of the muzzle, taken behind the noftrils, was one foot three inches. The fiffure of the mouth, when fhut, was eleven inches. The noftrils were two inches long by one broad; and from the end of the muzzle

It correſponds very well with the figure and deſcription * given by Belon, which I have alſo

muzzle to the eye meaſured ten inches. The eyes were diſtant from each other about ſix inches; and from their poſterior angle, to the aperture of the ears, meaſured four inches. The ears were ſituated behind and a little to one ſide the horns, and were near ſeven inches long, and nine inches in circumference at the baſe. The diſtance between the horns was little more than four inches; they were one foot two inches in length, ſix inches in circumference at the baſe, and, at half an inch from the points, only an inch and a half. They were of the ordinary colour of horn, and black near the extremities, which were diſtant from each other one foot ſeven inches. The bunch, which conſiſted entirely of fleſh, was ſeven inches in perpendicular height. The colour of the hair which covered it was blackiſh, and an inch and a half long. The tail, to the end of the vertebræ, was little more than two feet long; but, including the hair which hangs down to the ground, it was two feet ten inches and a half. The longeſt hairs of the tail meaſured one foot three inches. The teſticles were a foot and a half diſtant from the anus. It had four paps, ſituated like thoſe of the bull.

* This is a very ſmall bull; it is thick, fat, ſmooth, and well ſhaped. . . . It was already old, though its body was not ſo large as that of a ſtag; but it was more ſquat, and thicker than a roebuck, and ſo neat and compact in all its members, that it was extremely agreeable to behold. . . . Its feet reſembled thoſe of the ox; and its legs were ſhort and ſquat. Its neck is thick and ſhort, and the dewlap very ſmall. It has the head of an ox; and the horns riſe from a bone on the top of the head. They are black, much notched, like thoſe of the Gazelle, or Barbary antilope, and formed like a creſcent. . . It has the ears of a cow; its ſhoulders are plump, and a little elevated; its tail is long, and covered with black hair. It has the appearance of an ox, only it is not ſo tall. . . We have here given a figure of it.—Belon adds, that this ſmall ox was brought to Cairo from Azamia, a province of Aſia, and that it is alſo found in Africa; *Obſ. de Belon, fol.* 118.

inſerted,

inſerted, that the reader may have an opportunity of comparing them. Proſper Alpinus *, who deſcribes this animal, and gives a figure of it, ſays that it is found in Egypt. His deſcription agrees with mine, and alſo with Belon's. The only differences between the three are in the colour of the horns and hair. The zebu of Belon was yellow on the belly, brown on the back, and had black horns. That of Proſper Alpinus was red, marked with ſmall ſpots, with horns of the ordinary colour. Ours was of a pale yellow, almoſt black on the back, with horns of the ſame colour as thoſe of a common ox. In the figures of Belon and Proſper Alpinus, the bunch on the back is not ſufficiently marked. The oppoſite error takes place in the figure which Mr. Edwards † has lately given of this animal, from a drawing communicated to him by Sir Hans Sloane; for the bunch is too large. Beſides, the figure is incomplete; for it ſeems to have been drawn from a very young animal, whoſe horns were only beginning to ſhoot. It came, ſays Mr. Edwards, from the Eaſt Indies, where theſe ſmall oxen are uſed as we do horſes. From all theſe hints, and likewiſe from the varieties in the colour, and the natural mildneſs of this animal, it is apparent, that it belongs to the bunched race of oxen, and has derived its origin from a domeſtic ſtate, in which the ſmalleſt in-

* Proſp. Alpin. Hiſt. Nat. Egypt. p. 233.

† Nat. Hiſt. of Birds, p. 200.

 dividuals

dividuals have been chofen for a breed; for, in general, we find, that the bunched oxen in a domeftic ftate, like our own domeftic kind, are fmaller than thofe in a wild ftate. Thefe facts fhall afterwards be fully confirmed by the teftimonies of travellers.

5. *The bonafus of Ariftotle is the fame animal with the bifon of the Latins.* This propofition cannot be proved, without a critical difcuffion, with which I fhall not fatigue the reader*. Gefner, who was a man of literature as well as a naturalift, and who thought, as I do, that the bonafus might probably be the bifon, has examined the notices given of the bonafus by Ariftotle with more care than any other perfon; he has, at the fame time, corrected feveral erroneous expreffions in Theodore Gaza's tranflation; which errors, however, have been fervilely copied by all the fucceeding naturalifts. From thefe affiftances, and by rejecting from the remarks of Ariftotle whatever is obfcure, contradictory, or fabulous, the following feems to be the refult. The bonafus is a wild ox of Pœonia, and is equally large, and of the fame figure with the domeftic ox. But his neck, from the fhoulders to the eyes, is covered with long

* Here it is neceffary to compare what Ariftotle has faid of the bonafus (*Hift. Anim. lib.* ix. *cap.* 45.) with what he elfewhere remarks, (*lib. de Mirabilibus*) and likewife the particular paffages in his *Hift. Anim. lib.* ii. *c.* 1. *and* 16. and alfo to read Gefner's differtation on this fubject; *Hift. Quad. p.* 131.

hair,

hair, which is ſofter than the mane of a horſe. He has the voice of an ox. His horns are ſhort, and bended down round the ears. His legs are covered with long hair, as ſoft as wool; and his tail is ſhort in proportion to his ſize, though in every other reſpect it is ſimilar to that of the ox. Like the bull, he has the habit of raiſing the duſt with his feet. His ſkin is hard, and his fleſh tender and good. From theſe characters, which are all that can be collected from the writings of Ariſtotle, we ſee how nearly the bonaſus approaches to the biſon. Every article, indeed, correſponds, except the form of the horns, which, as was formerly remarked, varies conſiderably in animals that belong to the ſame ſpecies. We have ſeen horns bended in the ſame manner, which were taken from a bunched ox of Africa; and we ſhall afterwards prove, that this bunched ox is nothing but the biſon. What I now advance may likewiſe be confirmed by the teſtimonies of ancient authors. Ariſtotle calls the bonaſus a Pœonian ox; and Pauſanius *, ſpeaking of the Pœonian bull, ſays, in two different places, that theſe bulls are biſons. He likewiſe tells us, that the Pœonian bulls, which he ſaw at the Roman ſhews, had very long hair on the breaſt, and about the jaws. Laſtly, Julius Cæſar, Pliny, Pauſanius, Solinus, &c. when ſpeaking of wild oxen, mention the aurochs and the biſon, but take no no-

* Pauſan. in Beoticis et Phocicis.

tice

tice of the bonaſus. We muſt, therefore, ſuppoſe that, in the courſe of four or five centuries, the ſpecies of bonaſus has been loſt, unleſs we allow that the terms *bonaſus* and *biſon* denote only the ſame animal.

6. *The biſon of America might proceed originally from the European biſon.* The foundation of this opinion has already been laid in our diſſertation on the animals peculiar to the two Continents*. It was from the experiments of M. de la Nux that we derived much information on this ſubject. From him we learn, that the biſons, or bunched oxen of India and Africa, produce with the European bulls and cows, and that the bunch is only an accidental character, which diminiſhes in the firſt generation, and totally diſappears in the ſecond or third. Since the Indian biſons are of the ſame ſpecies with our oxen, and, of courſe, have the ſame origin, is it not natural to extend this origin to the American biſon? In ſupport of this ſuppoſition, every thing ſeems to concur. The biſon appears to be a native of cold and temperate regions. His name is derived from the German language. The ancients tell us, that he was found in that part of Germany which borders upon Scythia†; and there are ſtill biſons in the northern parts of Germany, in Poland,

* See vol. v. of this work.

† Pauciſſima Scythia gignit animalia, inopia fructus, pauca contermina illi Germania, inſignia tamen boum ferorum genera, jubatos biſontes; *Plin. Hiſt. Nat. lib.* viii. *cap.* 15.

and

and in Scotland. Hence they might paſs to America, or come from that country, as they are animals common to both Continents. The only difference between the European and American biſons is, that the latter are ſmaller. But even this difference is a farther proof that they belong to the ſame ſpecies; for it was formerly remarked, that, in general, both the domeſtic and wild animals, which have ſpontaneouſly paſſed, or been tranſported into America, have uniformly diminiſhed in ſize. Beſides, all the characters, not excepting the bunch and the long hair on the anterior parts of the body, are the ſame in the American and European biſons. Hence theſe animals muſt be regarded as not only of the ſame ſpecies, but as proceeding from the ſame race *.

7. *The urus, or aurochs, is the ſame animal with the common bull in its natural and wild ſtate.* This poſition is evident from the figure of the aurochs, and its whole habit of body, which are perfectly ſimilar to thoſe of our domeſtic

* Several perſons of note have reared ſmall oxen and wild cows, which are found in Carolina, and in other countries as far ſouth as Pennſylvania. Theſe ſmall oxen are tamed; but they ſtill retain ſo much of their natural ferocity, that they pierce through every hedge which oppoſes their paſſage. Their heads are ſo ſtrong, that they overturn the palliſades of their incloſures, to come at the cultivated fields, where they do much miſchief; and, as ſoon as a paſſage is opened, they are followed by the whole flock of domeſtic cattle. Theſe two kinds couple together, and have given riſe to an intermediate kind; *Voyage de Pierre Kalm, p.* 350.

meſtic bull. The aurochs, like every other animal that enjoys liberty, is only larger and ſtronger. The aurochs is ſtill found in ſome northern provinces: The young aurochs have ſometimes been carried off from their mothers, and, after being reared to maturity, they produced with our domeſtic bulls and cows*. Hence theſe animals muſt unqueſtionably belong to the ſame ſpecies.

8. *Laſtly, the biſon differs from the aurochs by accidental varieties only; and, conſequently, it is, as well as the aurochs, of the ſame ſpecies with the domeſtic ox.* The bunch, the length and quality of the hair, and the figure of the horns, are the ſole characters by which the biſon can be diſtinguiſhed from the aurochs. But we have ſeen the bunched oxen produce with the common domeſtic kind; we likewiſe know, that the length and quality of the hair, in all animals, depend on the nature of the climate; and, we have remarked, that, in the ox, ſheep, and goat, the form of the horns is various and fluctuating. Theſe differences, therefore, are by no means ſufficient to conſtitute two diſtinct ſpecies: And, ſince our domeſtic cattle produce with the bunched Indian oxen, they would likewiſe undoubtedly produce with the biſon or bunched ox of Europe. Among the almoſt innumerable varieties of theſe animals in different

* Epiſt. ant. Schmebergenis, ad Geſnerum, *Hiſt. Quad. p.* 141.

climates, there are two primitive races, both of which have long continued in a natural ſtate, the biſon or bunched ox, and the aurochs, or ox without a bunch. Theſe races have ſubſiſted either in a wild or domeſtic ſtate, and have been diffuſed, or rather tranſported by men into every climate of the globe. All the domeſtic oxen without bunches have proceeded originally from the aurochs, and all the bunched oxen have been derived from the biſon. To obtain a juſt idea of theſe varieties, we ſhall give an enumeration of them as they exiſt in different parts of the world:

To begin with the north of Europe; the ſmall bulls and cows of Iceland *, though they belong to the ſame race with our oxen, are deprived of horns. The magnitude of theſe animals depends more on the abundance and quality of their paſture, than on the nature of the climate. The Dutch † bring meager cattle from Denmark, which fatten prodigiouſly in their rich meadows, and give a great quantity of milk. Theſe Daniſh cattle are much larger than ours. The cows and bulls of the Ukraine, where the paſture is excellent, are reckoned to be the largeſt in Europe,

* Iſlandi domeſtica animalia habent vaccas, ſed multæ ſunt mutilæ cornibus; *Dithmar Blefken. Iſland. p.* 49.

† About the month of February, vaſt numbers of meager cows are brought from Denmark, which the Dutch peaſants turn into their meadows. They are much larger than thoſe of France; and each of them yields from eighteen to twenty Paris pints of milk a day; *Voyage Hiſt. de l'Europe, tom.* v. *p.* 77.

rope,

rope *, and are of the ſame race with the common kind. In Switzerland, where the tops of the firſt mountains are covered with verdure and flowers, and are ſolely deſtined for the feeding of cattle, the oxen are nearly double the ſize of thoſe in France, where they are commonly fed upon groſs herbage, which is deſpiſed by the horſes. During winter, bad hay and leaves are the common food of our oxen; and, in ſpring, when they ſtand in need of being recruited, they are excluded from the meadows. Hence they ſuffer more in ſpring than in winter; for they then hardly receive any thing in the ſtable, but are conducted into the highways, into fallow grounds, or into the woods, and are always kept at a diſtance from fertile land; ſo that they are more fatigued than nouriſhed. Laſtly, in ſummer, they are permitted to go into the meadows, which are then eat up, and parched with drought. During the whole year, therefore, theſe animals are never ſufficiently nouriſhed, nor receive food agreeable to their nature. This is the ſole cauſe which renders them weak, and of a ſmall ſize; for, in Spain, and in ſome diſtricts of our provinces, where the paſture is good, and reſerved for oxen alone, they are much larger and ſtronger.

* In the Ukraine, the paſture is ſo excellent, that the cattle are much larger than in any other part of Europe. It requires a man above the common ſtature to be able to lay his hand on the middle of an ox's back; *Relat. de la Grande Tartarie, p.* 227.

In Barbary *, and moſt parts of Africa, where the lands are dry, and the paſture poor, the oxen are ſtill ſmaller, the cows give much leſs milk than ours, and moſt of them loſe their milk with their calves. The ſame remark applies to ſome parts of Perſia †, of Lower Æthiopia ‡, and of Great Tartary ||; while, in the ſame countries, and at no great diſtances, as in Cal-

* In the kingdom of Tunis and Algiers, the oxen and cows, generally ſpeaking, are not ſo large as thoſe of England. After being well fattened, the largeſt of them ſeldom weigh above five or ſix hundred pounds. The cows give very little milk, and it commonly dries up when their calves are taken from them; *Shaw's Travels*.——Boves domeſtici, quotquot in Africæ montibus naſcuntur, adeo ſunt exigui, ut aliis collati, vituli biennes appareant, monticolæ tamen illos aratro exercentes tum robuſtos, tum laboris patientes aſſerunt; *Leon. Afric. Africæ Deſcript. tom.* ii. *p.* 753.——The cows of Guiney are dry and meager. . . . Their milk is ſo poor and ſcanty, that twenty or thirty of them are hardly ſufficient to ſerve the General's table. Theſe cows are very ſmall and light; one of the beſt of them, when full grown, weighs not above two hundred and fifty pounds, though, in proportion to its ſize, it ought to weigh one half more; *Voyage de Boſman, p.* 236.

† The people of Caramania, at a little diſtance from the Perſic gulph, have ſome goats and cows; but their horned cattle are not ſtronger than calves, or Spaniſh bulls of a year old; and their horns exceed not a foot in length; *Ambaſſade de Silva Figueroa, p.* 62.

‡ In the province of Guber in Æthiopia, a number of large and ſmall cattle are reared; but their cows are not larger than our heifers; *L'Afrique de Marmol, tom.* iii. *p.* 66.

|| At Kraſnojarſk, the Tartars have a number of cattle; but a Ruſſian cow gives twenty times as much milk as one of theirs; *Voyage du Gmelin à Kamtſchatka.*

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muck Tartary *, in Upper Æthiopia †, and, in Abyssinia ‡, the oxen are of a prodigious size. Hence this difference depends more on the quantity of food, than on the temperature of the climate. In the northern and temperate, as well as in the warm regions, we find, at very inconsiderable distances, large or small oxen, according to the quantity and quality of the pasture they have to feed upon.

The race of aurochs, or of the ox without a bunch, occupies the frozen and temperate zones, and is not much diffused over the southern regions. The race of the bison, or bunched ox, on the contrary, occupies all the warm climates. In the whole continent of India ||, in the eastern and

* The oxen, in the provinces occupied by the Calmuck Tartars, are still larger than those of the Ukraine, and taller than in any other part of the world; *Relat. de la Grande Tartarie, p.* 228.

† In Upper Æthiopia,, the cows are as large as camels, and without horns; *L'Afrique de Marmol, tom.* iii. *p.* 157.

‡ The riches of the Abyssinians consist chiefly in cows. . . . The horns of the oxen are so large, that they hold twenty pints. They are used by the Abyssinians for pitchers and bottles; *Voyage de Abyssinie du P. Lobo, tom.* i. *p.* 57.

|| The oxen which draw coaches in Surat are white, of a good size, and have two bunches like those of certain camels. They run and gallop like horses, and are garnished with splendid housing, and a number of small bells fixed to their necks. When the animals are in motion, the bells are heard at a considerable distance, and their noise in the streets is very agreeable. These coaches are used not only in the cities of India, but in travelling through the country; *Voyage de Pietro della Valle, tom.* vi. *p.* 273.—The carriages of the Mogul are

and ſouthern iſlands *, throughout all the regions of Africa †, from Mount Atlas to the Cape of

are a kind of coaches with two wheels. They are drawn by oxen, which, though naturally heavy and ſlow in their movements, acquire, by long habit, ſuch a dexterity in drawing theſe carriages, that no other animal can outrun them. Moſt of theſe oxen are very large, and have a bunch between their ſhoulders, which riſes to the height of ſix inches; *Voyage de Jean Ovington, tom.* i. *p.* 258.—The oxen of Perſia are like our own, except on the frontiers of India, where they have a bunch on the back. Few oxen are eaten in this country: They are reared chiefly for labouring the ground, or for carrying burdens. Thoſe employed in carrying loads are ſhod, on account of the ſtony mountains they have to paſs; *Voyage de Chardin, tom.* ii. *p.* 28.—The oxen of Bengal have a kind of bunch on the back. We found them as fat and as well taſted as in any other country. The largeſt and beſt ſell at two rixdollars only; *Voyage de la Compagnie des Indes de Hollande, tom.* iii. *p.* 270.—The oxen of Guzarat are ſhaped like ours, except that they have a bunch between the ſhoulders; *Voyage de Mandelſlo, tom.* ii. *p.* 234.

* In the iſland of Madagaſcar, an immenſe number of oxen are reared: They are very different from thoſe of Europe, each of them having a bunch of fat on their backs, in the form of a wen, which has made ſome authors alledge that they are ſuckled by camels. There are three kinds, namely, thoſe which have horns, thoſe which have pendulous horns attached to the ſkin, and thoſe which have no horns, but only a ſmall oſſeous eminence, in the middle of their front, covered with ſkin. The laſt kind fail not, however, to combat other bulls, by ſtriking their bellies with their heads. They all run like our ſtags, and have longer legs than thoſe of Europe; *Voyage de Flacourt, p.* 3.—The oxen in the iſland of Johanna, near the Moſambique coaſt, differ from ours. They have a fleſhy creſcent between the neck and back. This portion of fleſh is preferred to the tongue, and is as well taſted as the marrow; *Groſſe's Travels, p.* 42.

† The oxen of Aguada-Sanbras are likewiſe larger than thoſe of Spain. They have bunches, but no horns; *Premier*

of Good Hope *, there are almoſt no oxen without bunches. It even appears that this race, which is diffuſed over all the warm countries, has ſeveral advantages over the other; for, like the biſon, from which they have proceeded, theſe bunched oxen have ſofter and more gloſſy hair than ours, whoſe hair, like that of the aurochs, is hard, and thinly ſpread over the body. They are likewiſe ſwifter, more proper for ſupplying the place of the horſe †, and, at the ſame time,

Voyage des Hollandois aux Indes Orientales, tom. i. *p.* 218.—The Moors have numerous flocks on the banks of the Niger. . . . . Their oxen are much thicker, and have longer legs than thoſe of Europe. They are remarkable for a large fleſhy wen, which riſes between their ſhoulders more than a foot high. This wen is a delicious morſel; *Voyage au Senegal, par M. Adanſon, p.* 57.

* At the Cape of Good Hope, there are three kinds of oxen, which are all large, and very ſwift. Some of them have a bunch on the back; others have pendulous horns; and others have horns like thoſe of the European kind; *Voyage de Francois le Guat, tom.* ii. *p.* 147.

† As the oxen in India are perfectly gentle, many people travel on them as we do on horſes. Their common pace is ſoft. Inſtead of a bit, a ſmall cord is paſſed through the cartilage of their noſtrils, which is tied to a larger cord, and ſerves as a bridle; and this bridle is fixed to a bunch on the fore part of the back, which is wanting in our oxen. They are ſaddled like horſes, and, when puſhed, move as briſkly. Theſe animals are uſed in moſt parts of India; and no other are employed in drawing carts and chariots. They are fixed to the end of the beam by a long yoke, which is placed on the necks of the two oxen; and the driver holds the rope to which the cord that paſſes through the noſtrils is tied; *Relation de Thevenot, tom.* iii. *p.* 151.—This Indian Prince was ſeated on

time, not ſo ſtupid and indolent as our oxen. They are more tractable and intelligent *, and have more of thoſe relative feelings from which advantage may be derived. They are likewiſe treated with more care than our beſt horſes. The reſpect the Indians entertain for

on a chariot drawn by two white oxen, with ſhort necks, and bunches on their ſhoulders; but they were as ſwift and alert as our horſes; *Voyage d'Olearius, tom.* i. *p.* 458.—The two oxen which were yoked to my coach coaſt near 600 rupees. This price need not aſtoniſh the reader; for ſome of theſe oxen are very ſtrong, and perform journeys of ſixty days, at the rate of from twelve to fifteen leagues a day, and always at a trot. When one half of the day's journey is finiſhed, each of them is ſupplied with two or three balls of the ſize of a penny loaf, made of flour knedded with butter and black ſugar; and, at night, their common food is chick-peas bruiſed, and ſteeped for half an hour in water; *Voyage de Tavernier, p.* 36.—Some of theſe oxen follow the horſes at a ſmart trot. The ſmalleſt are the moſt nimble. The Gentoos, and particularly the Banians and merchants of Surat, uſe theſe oxen for drawing their carriages. It is remarkable, that, notwithſtanding their veneration for theſe animals, the people ſcruple not to employ them in ſuch laborious ſervices; *Groſſe's Travels, p.* 253.

* In the country of Camandu in Perſia, there are many oxen entirely white, with ſmall blunt horns, and bunches on their backs. They are very ſtrong, and carry heavy burdens. When about to be loaded, they lie down on their knees like the camels, and riſe again when the goods are properly faſtened. To this practice they are trained by the natives; *Deſcription de l'Inde, par Marc. Paul, liv.* i. *chap.* 22.——The European labourers prick their oxen with a goad, in order to make them advance. But, in Bengal, their tails are only twiſted. Theſe animals are extremely tractable. When loading, they are inſtructed to lie down, and to riſe with the burdens on their backs; *Lett. Edif. recueil* ix. *p.* 422.

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these animals is so great*, that it has degenerated into superstition, which is the ultimate step of blind veneration. The ox, being the most useful animal, has appeared to them to merit the greatest reverence. This venerable object they have converted into an idol, a kind of beneficent and powerful divinity; for every thing we respect must be great, and have the power of doing much good, or much evil.

These bunched oxen vary perhaps more than ours in the colour of the hair and the figure of their horns. The most beautiful are white, like those of Lombardy †. Some of them have no horns; the horns of others are very high, and in others they are almost pendulous. It even appears that this first race of bisons, or bunched oxen, should be divided into two secondary races, the one large, and the other small, which last comprehends the zebu. Both

* The Queen is attended with the ladies of fashion, and the pavement or roads through which she passes are strewed with the dung of the cows formerly mentioned. These people have such a veneration for their cows, that they are allowed to enter the King's palace, and are never stopped on their passage, wherever they choose to go. The King and all the nobles give place to these cows, as well as to the bulls and oxen, with every possible mark of respect and veneration; *Voyage de Francois Pyrard, tom.* i. *p.* 449.

† All the cattle of Italy are gray or white; *Voyage de Burnet, part.* ii. *p.* 12.——The oxen of India, and especially those of Guzarat and of Cambaya, are generally white, like those of Milan; *Grosse's Travels, p.* 253.

are found nearly in the ſame climates*, and are equally gentle and eaſily managed. Both have fine hair, and bunches on their backs. This bunch is only an excreſcence, a fleſhy wen, which is equally tender and good as the tongue of an ox. The bunches of ſome oxen weigh from forty to fifty pounds †, and thoſe of others are much ſmaller ‡. In ſome, the horns are prodigiouſly large. In the royal cabinet, there are ſpecimens of them of three feet and a half in length, and ſeven inches in diameter at the baſe. We are aſſured by ſeveral tra-

* The oxen of India are of different ſizes, ſome large, others ſmall, and others of a middle ſize. But, in general, they travel well, ſome of them making journeys of fifteen leagues a day. Some of them are near ſix feet high; but theſe are rare. There is another kind called *dwarfs*, becauſe they exceed not three feet in height. The latter, like the others, have a bunch on their backs, run very faſt, and are uſed for drawing ſmall carts. The white oxen are extremely dear. I have ſeen two, which belonged to the Dutch, each of which coſt two hundred crowns. They were indeed very beautiful and ſtrong; and the chariot in which they were yoked had a magnificent appearance. When the people of faſhion have fine oxen, they take great care of them. The tips of their horns are ornamented with copper rings. They are covered with clothes, in the ſame manner as horſes. They are daily curried, and fed with great attention; *Relat. d'un Voyage par Thevenot, tom.* iii. *p.* 252.

† At Madagaſcar, there are oxen whoſe bunch weighs thirty, forty, fifty, and even ſixty pounds; *Voyage à Madagaſcar, par de V. Paris, p.* 245.

‡ The oxen have a bunch near the neck, which is larger and ſmaller in different individuals; *Relat. de Thevenot, tom.* ii. *p.* 223.

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vellers, that they have ſeen horns which could contain fifteen and even twenty pints of water.

Throughout all Africa *, the large cattle are never caſtrated; and this operation is not much practiſed in India †. When the bulls are caſtrated, the teſticles are not cut off, but compreſſed. Though the Indians keep a great number of theſe animals for drawing their carriages and plowing the ground, they do not rear ſo many as we do. As, in all warm countries, the cows give little milk, as the natives are unacquainted with butter or cheeſe, and, as the fleſh of the calves is not ſo good as in Europe, the inhabitants do not greatly multiply horned cattle. Beſides, in all the ſouthern provinces of Africa and Aſia, being more thinly peopled than thoſe of Europe, there are a number of wild oxen, which are taken when young. They tame ſpontaneouſly, and ſubmit, without reſiſtance, to all kinds of domeſtic labour. They become ſo tractable, that they are managed with as much eaſe as horſes: The voice of their maſter is ſufficient to direct their courſe, and to make them obey. They are ſhod ‡, curried, careſſed, and ſupplied

* Along the coaſt of Guiney, we ſee bulls and cows only; for the negroes underſtand not the practice of caſtration; *Voyage de Boſman, p.* 236.

† When the Indians caſtrate their bulls, it is not by inciſion, but by the compreſſion of ligatures, which prevents the nouriſhment of the parts; *Groſſe's Travels, p.* 253.

‡ As the roads in the province of Aſmer are very ſtony, the oxen are ſhod before they ſet out on long journeys. They

ſupplied abundantly with the beſt food. Theſe animals, when managed in this manner, appear to be different creatures from our oxen, which only know us from our bad treatment. The goad, blows, and hunger, render them ſtupid, refractory, and feeble. If we had a proper knowledge of our own intereſt, we would treat our dependents with greater lenity. Men of inferior condition, and leſs civilized, ſeem to have a better notion than other people of the laws of equality, and of the different degrees of natural equity. The farmer's ſervant may be ſaid to be the peer of his maſter. The horſes of the Arab, and the oxen of the Hottentot, are favourite domeſtics, companions in exerciſes, aſſiſtants in every labour, and participate the habitation, the bed, and the table of their maſters. Man, by this communication, is not ſo much degraded as theſe brutes are exalted and humanized. They acquire affectionateneſs, ſenſibility, and intelligence. There they perform every thing from love, which they do here from fear. They do more; for as their nature is improved by the gentleneſs of their education, and the perpetual attention beſtowed on them,

They are thrown on the ground by ropes fixed to their feet. When in this ſituation, their four feet are placed on a machine made of two croſs ſticks. At the ſame time, two thin, light pieces of iron are fixed to each foot, and cover not above one half of the hoof. They are fixed by three nails, above an inch in length, which are rivetted on the oppoſite ſide; *Relat. de Thevenot, tom.* iii. *p.* 150.

they become capable of performing actions which approach to the human powers. The Hottentots * train their oxen to war, and employ them nearly in the ſame manner as the Indians employ the elephants. Theſe oxen are inſtructed to guard the flocks †, which they conduct

* The Hottentots have oxen which they employ ſucceſsfully in their combats. Theſe animals are called *Backeleys*, from the word *backeley*, which, in the Hottentot language, ſignifies *war*. In all their armies there are conſiderable troops of thoſe oxen, which are eaſily governed, and which are let looſe by the chief, when a proper opportunity occurs. They inſtantly dart with great impetuoſity on the enemy. They ſtrike with their horns, kick, overturn, and trample under their feet every thing that oppoſes their fury. Hence, of not quickly turned back, they run ferociouſly into the ranks, which they ſoon put into the utmoſt diſorder, and thus prepare an eaſy victory for their maſters. The manner in which theſe animals are trained and diſciplined, reflects much honour on the genius and ability of the Hottentots; *Voyage du Cap de Bonne-Eſperance, par Kolbe, tom.* i. *p.* 160.

† Theſe backeleys are likewiſe of great uſe in guarding the flocks. When paſturing, at the ſmalleſt ſignal from the keeper, they bring back and collect the wandering animals. They alſo run with fury upon ſtrangers, which makes them a great ſecurity againſt the attacks of the *buſchies*, or robbers of cattle. Every *Kraal* has at leaſt ſix of theſe backeleys, which are choſen from among the fierceſt oxen. When one of them dies, or becomes unſerviceable by age, another is ſelected from the flock to ſucceed him. The choice is made by one of the oldeſt Kraals, who is ſuppoſed to diſtinguiſh the animal that will be moſt eaſily inſtructed. This noviciate is aſſociated with one of the moſt experienced backeleys, and he is taught to follow his companion, either by blows, or by other means. In the night, they are tied together by the horns, and are likewiſe kept in the ſame ſituation during part of the day, till the young ox is completely trained to be a vigilant defender of the flock. Theſe backeleys, or keepers

conduct with dexterity, and defend them from the attacks of ſtrangers and ferocious animals. They are taught to diſtinguiſh friends from enemies, to underſtand ſignals, and to obey their maſter's voice. Thus the moſt ſtupid of men are the beſt preceptors to brutes. How does it happen, that the moſt enlightened man, inſtead of managing his fellow creatures, has ſo much difficulty in conducting himſelf?

Thus the biſons, or bunched oxen, are diffuſed over all the ſouthern parts of Africa and Aſia. They vary greatly in ſize, in colour, in the figure of the horns, &c. On the contrary, in all the northern regions of theſe two quarters of the world, and in the whole of Europe, including the adjacent iſlands, as far as the Azores, there are only oxen without bunches *, which derive their origin from the aurochs.

keepers of the flocks, know every inhabitant of the *Kraal*, and ſhew the ſame marks of reſpect for all the men, women, and children, as a dog does for thoſe who live in his maſter's family. Hence, theſe people may approach their cattle with the utmoſt ſafety; for the backeleys never do them the ſmalleſt injury. But, if a ſtranger, and particularly an European, ſhould uſe the ſame freedom, without being accompanied with a Hottentot, his life would be in the greateſt danger. Theſe backeleys, which paſture all around, would ſoon run upon him at full gallop, and, if not protected by the ſhepherds, by fire arms, or by ſuddenly climbing a tree, his deſtruction is inevitable. In vain would he have recourſe to ſticks or ſtones: A backeley is not to be intimidated by ſuch feeble weapons; *Deſcription du Cap de Bonne-Eſperance, par Kolbe, part.* i. *chap.* 20. *p.* 307.

* The oxen of Tercera are the largeſt and fineſt in Europe. Their horns are very large. They are ſo gentle and tame,

aurochs. And, as the aurochs, which is our ox in a wild ſtate, is larger and ſtronger than the domeſtic kind, the biſon, or wild ox with a bunch, is likewiſe ſtronger and larger than the Indian domeſtic ox. He is alſo ſometimes ſmaller; but the ſize depends ſolely on the quantity of food. In Malabar*, Canara, Abyſſinia, and Madagaſcar, where the meadows are fertile and ſpacious, the biſons are of a prodigious ſize. In Africa, and in Arabia Petrea †, where the ground is dry and ſterile, the zebus or biſons are of a ſmall ſize.

Oxen without bunches are ſpread over all America. They were ſucceſſively tranſported

tame, that, from a flock conſiſting of more than a thouſand, a ſingle animal, upon its name being called by the proprietor, (for every individual has its peculiar name, like our dogs,) inſtantly runs to him; *Voyage de la Compagnie des Indes de Hollande, tom.* i. *p.* 490.——See alſo *Le Voyage de Mandelſlo, tom.* i. *p.* 478.

* In the mountains of Malabar and Canara, there are wild oxen ſo large, that they approach the ſtature of the elephant; while the domeſtic oxen of the ſame country are ſmall, meager, and ſhort lived; *Voyage du P. Vincent-Marie, chap.* 12.

† I ſaw at Maſcati, a town of Arabia Petrea, another ſpecies of mountain ox, with gloſſy hair, as white as that of the ermine. It was ſo handſomely made, that it rather reſembled a ſtag than an ox. Its legs, indeed, were ſhorter; but they were fine and nimble. The neck was ſhort. The head and tail reſembled thoſe of the common ox, but were better ſhaped. The horns are black, hard, ſtraight, beautiful, about three or four palms in length, and garniſhed with rings which ſeem as if they had been turned in a lathe; *Voyage du P. Vincent-Marie, chap.* 12.

thither

thither by the Spaniards and other Europeans. Theſe oxen have greatly multiplied, but have become ſmaller in theſe new territories. This ſpecies was abſolutely unknown in South America. But, in all the northern regions, as far as Florida, Louiſiana, and even in the neighbourhood of Mexico, the biſons, or bunched oxen, were found in great numbers. Theſe biſons, which formerly inhabited the woods of Germany, of Scotland, and other northern countries, have probably paſſed from the Old to the New Continent. Like all the other animals, their ſize has diminiſhed in America; and according as they lived in climates more or leſs cold, their hair became longer or ſhorter. In Hudſon's Bay, their beard and hair are longer and more buſhy than in Mexico; and, in general, their hair is ſofter than the fineſt wool *. We cannot heſitate in pronouncing theſe biſons of the New Continent to be the ſame ſpecies with thoſe of the Old. They have preſerved all the principal characters, as

* The wild oxen of Louiſiana, inſtead of hair, are covered with wool as fine as ſilk, and all curled. It is longer in winter than in ſummer, and is much uſed by the inhabitants. On their ſhoulders they have a pretty high bunch. Their horns are very fine, and are uſed by the hunters for carrying their powder. Between the horns, and toward the top of the head, there is a tuft of hair ſo thick, that a piſtol bullet, though diſcharged ever ſo near, cannot penetrate it. I tried the experiment myſelf. The fleſh of theſe oxen is excellent, as well as that of the cow and calf; its flavour and juice are exquiſite; *Mem. ſur la Louiſiane, par M. Dumont, p.* 75.

the

the bunch on the ſhoulders, the long hair under the muzzle and on the anterior parts of the body, and the ſhort legs and tail: And, upon comparing what has been ſaid of them by Hernandez *, Fernandez †, and all the other travellers and hiſtorians of the New World ‡, with what has been delivered concerning the European biſon, by ancient and modern naturaliſts ||, we will be convinced that they are not animals of different ſpecies.

Thus the wild and domeſtic ox of Europe, Aſia, Africa, and America, the bonaſus, the aurochs, the biſon, and the zebu, are animals of the ſame ſpecies, which, according to the differences of climate, of food, and of treatment, have undergone the various changes above deſcribed. The ox is not only the moſt uſeful animal, but moſt generally diffuſed; for it has been found every where, except in South America §. Its conſtitution

* Hernand. Hiſt. Mex. p. 587.

† Fernand. Hiſt. Nov. Hiſp. p. 10.

‡ Singularités de la France Antarctique, par Thevet, p. 148. —Memoir ſur la Louiſiane, par Dumont, p. 75.—Deſcription de la Nouvelle France, par le P. Charlevoix, tom. iii. p. 130. —Lettres Edif. xi. recueil, p. 318, et xxiii. recueil, p. 238. —Voyage de Robert Lade, tom. ii. p. 315.—Dernieres decouvertes dans l'Amerique ſeptentrionale, par M. de la Salle, p. 104. &c. &c.

|| Plin. Hiſt. Nat. lib. viii.—Geſner. Hiſt. Quad. p. 128.— Aldrov. de Quad. Biſ. p. 253.—Rzacinſky, Hiſt. Nat. Polon. p. 214. &c.

§ The bunched ox, or wild biſon, appears to have inhabited the northern parts of America only, as Virginia, Florida,

conſtitution is equally adapted to the ardours of the South, and the rigours of the North. It appears to be very ancient in all climates. It is domeſtic in civilized nations, and wild in deſert countries, or among unpoliſhed people. From its own reſources, it ſupports itſelf in a ſtate of nature, and never loſes thoſe qualities which render it ſerviceable to man. The young wild calves which are carried off from their mothers in India and Africa, ſoon become as gentle as thoſe of the domeſtic race. This conformity in natural diſpoſitions is a ſtill farther proof of the identity of the ſpecies. Mildneſs of character in theſe animals indicates a phyſical flexibility in the form of their bodies; for in every ſpecies, whoſe diſpoſitions are gentle, and who have been ſubjected to a domeſtic ſtate, there are more varieties than in thoſe who, from an inflexibility of temper, have remained ſavage.

rida, the country of the Illionois, Louiſiana, &c.; for, though Hernandez calls it the *Mexican bull*, we learn from a paſſage of Antonio de Solis, that this animal was a ſtranger in Mexico, and that it was kept in the menagery of Montezuma with other wild beaſts which were brought from New Spain. 'In 'a ſecond court, we ſaw all the wild beaſts of New Spain. 'They were kept in ſtrong wooden cages. But nothing ſur-'priſed us ſo much as the appearance of the Mexican bull, 'which is a rare animal, and has the camel's bunch on its 'ſhoulders, the narrow and meager flank of the lion, a buſhy 'tail and mane, and the horns and cloven foot of the bull. '. . . . This kind of amphitheatre appeared to the Spa-'niards worthy of a great Prince;' *Hiſt. de la Conquête du Mexique, par Antonio de Solis, p.* 519.

If

If it be aſked, whether the aurochs or the biſon be the primitive race of oxen, a ſatisfactory anſwer may be obtained by drawing concluſions from the facts already related. The bunch of the biſon, as formerly remarked, is an accidental character only, which is effaced by the commixture of the two races. The aurochs, or ox without a bunch, is, therefore, the moſt powerful and predominant race. Were it otherwiſe, the bunch, inſtead of diſappearing, would extend, and ſubſiſt in all the individuals proceeding from a mixture of the two races. Beſides, this bunch of the biſon, like that of the camel, is not ſo much a production of nature, as an effect of labour, and a badge of ſlavery. In all ages, and in every country, the oxen have been obliged to carry burdens. Their backs, by conſtant and often exceſſive loads, have been deformed; and this deformity was afterwards tranſmitted by generation. There remained no oxen without this deformity, except in thoſe countries where they were not employed in carrying burdens.

Throughout all Africa and the Eaſt, the oxen are bunched; becauſe, at all periods, they have carried loads on their ſhoulders. In Europe, where they are employed in the draught only, they have not undergone this deformed change, which is probably occaſioned, in the firſt place, by the compreſſion of the loads, and, in the ſecond, by a redundance of nouriſhment; for it diſappears when the animal is meager and ill

fed.

fed. Domeſtic oxen with bunches might eſcape, or be abandoned in the woods, where their poſterity would inherit the ſame deformity, which, inſtead of diſappearing, would augment by the abundance of food peculiar to all uncultivated countries; ſo that this ſecondary race would ſpread over all the deſert lands of the North and South, and paſs, like the other animals which can ſupport the rigours of cold, into the New Continent. The identity of the ſpecies of the biſon and aurochs is ſtill farther confirmed from this circumſtance, that the biſons of North America have ſo ſtrong an odour of muſk, that they have been called *muſk oxen* by moſt travellers *; and, at the ſame time, we learn, from the teſtimony of ſpectators †, that the aurochs, or wild

* Fifteen leagues from the river Danoiſe, is the river called *Sea-wolf*, both in the neighbourhood of Hudſon's Bay. In this country, there is a ſpecies of ox called the *muſk ox*, from his ſtrong odour of muſk, which, in certain ſeaſons, renders his fleſh uneatable. Theſe animals have very fine wool, which is longer than that of the Barbary ſheep. I had ſome of it ſent me to France in the year 1708, of which I made ſtockings, which were as fine as thoſe of ſilk. . . . . Theſe oxen, though ſmaller than ours, have larger and longer horns. Their roots join on the top of the head, and deſcend on the ſide of the eyes as low as the throat; then the tips mount up in the form of a creſcent. I have ſeen two of them which weighed together ſixty pounds. Their legs are ſo ſhort, that the wool always trails on the ground where they walk, which renders them ſo unſhapely, that it is difficult, at a diſtance, to know at which end the head is placed; *Hiſt. de la Nouvelle France, par le P. Charlevoix, tom.* iii. *p.* 132.—See alſo *Le Voyage de Robert Lade, tom.* ii. *p.* 315.

† Ephem. German. decad. ii. ann. 2. obſerv. 7.

OX

ox of Pruſſia and Livonia, has the ſame ſcent of muſk.

Of all the names, therefore, prefixed to this article, which, both by ancient and modern naturaliſts, are repreſented as ſo many diſtinct ſpecies, there remain only the buffalo and the ox. Theſe two animals, though very ſimilar, both domeſtic, often living under the ſame roof, and fed in the ſame paſtures, though at liberty to intermix, and frequently ſtimulated to it by their keepers, have uniformly refuſed to unite. They neither copulate nor produce together. Their natures are more remote from each other than that of the aſs and horſe: They even ſeem to have a mutual antipathy; for we are aſſured, that cows will not ſuckle young buffaloes, and that female buffaloes refuſe to ſuckle calves. The diſpoſition of the buffalo is more obſtinate and untractable than that of the ox. He is leſs obedient, more violent, and ſubject to humours more frequent and more impetuous. All his habits are groſs and brutal. Next to the hog, he is the dirtieſt of domeſtic animals; for nothing is more difficult than to dreſs and keep him clean. His figure is groſs and forbidding. His aſpect is wild and ſtupid. He ſtretches out his neck in an awkward, ignoble manner, and carries his head ſo ungracefully, that it generally hangs down toward the ground. He bellows hideouſly, and with a ſtrong and deeper tone than that of the bull. He has meager limbs, a naked tail,

tail, a dark countenance, and a ſkin as black as his hair. He differs chiefly from the ox by this black colour of his ſkin: It appears under the hair, which is not cloſe. His body is thicker and ſhorter than that of the ox, his legs longer, his head proportionally ſmaller, his horns leſs round, being black and compreſſed; and he has a tuft of curled hair on his front. His ſkin is alſo thicker and harder than that of the ox. His fleſh is black and hard, and has not only a bad taſte, but a moſt diſagreeable odour*. The milk of the female buffalo is not ſo good as that of the cow; but ſhe yields it in much greater quantity †. In warm countries, moſt cheeſes are made of the buffalo's milk. The fleſh of young buffaloes, though fed with milk, is not good. The ſkin is of more value than the reſt of

* In travelling from Rome to Naples, we are ſometimes regaled with crows and buffaloes, and are happy to find them. The fleſh of the buffalo is black, hard, and ſtinking, and none but poor people and the Jews of Rome are in the habit of eating it; *Voyage de Miſſon, tom.* iii. *p.* 54.

† In entering Perſia, by the way of Armenia, the firſt place worthy of notice is called the *Three Churches*, at the diſtance of three leagues from Erivan. In this country, there are vaſt numbers of buffaloes, which ſerve the inhabitants for ploughing their lands. The females yield a great quantity of milk, of which butter and cheeſe are made. Some females give daily twenty-two pints of milk; *Voyage de Tavernier, liv.* i. *tom.* i. *p.* 41.—The female buffaloes go with young twelve months, and often give twenty-two pints of milk a-day, of which ſo great quantities of butter are made, that, in ſome of the villages on the Tigris, we ſaw from twenty to twenty-five barks loaded with butter, to be ſold along both ſides of the Perſic Gulf; *Id. ib.*

 the

the animal, the tongue of which alone is good for eating. The ſkin is ſolid, pretty flexible, and almoſt impenetrable. As theſe animals are larger and ſtronger than oxen, they are employed with advantage in different kinds of labour. They are made to draw, and not to carry burdens. They are directed and reſtrained by means of a ring paſſed through their noſe. Two buffaloes yoked, or rather chained, to a chariot, draw as much as four ſtrong horſes. As they carry their neck and head low, the whole weight of their body is employed in drawing; and their maſs much ſurpaſſes that of a labouring horſe.

The height and thickneſs of the buffalo are ſufficient indications that he originated from warm climates. The largeſt quadrupeds are produced in the Torrid Zone of the Old Continent; and the buffalo, in the order of magnitude, ſhould be ranked next to the elephant, the rhinoceros, and the hippopotamus. The camelopard and the camel are taller but thinner; and the whole are equally natives of the ſouthern regions of Aſia and Africa. Buffaloes, however, live and produce in Italy, in France, and in other temperate countries. Thoſe kept in the royal menagery have produced twice or thrice. The female brings forth but one at a birth, and goes with young about twelve months; which is a ſtill farther proof of the difference of this ſpecies from that of the cow, whoſe time of geſtation is only nine months. It appears, likewiſe,

wiſe, that theſe animals are more gentle and leſs brutal in their native country; and that, the warmer the country, their diſpoſition is the more docile. In Egypt *, they are more tractable than in Italy, and in India † than in Egypt. The Italian buffaloes have alſo more hair than thoſe of Egypt, and the Egyptian than thoſe of India ‡. Their fur is by no means cloſe;

* The buffaloes are numerous in Egypt. Their fleſh is good; and they are not ſo ferocious as thoſe of Europe. Their milk is of great uſe, and produces excellent butter; *Deſcript. l'Egypte, par Maillet, p.* 27.

† In the kingdom of Aunan and Tonquin, the buffaloes are very tall, and have high ſhoulders. They are alſo robuſt, and ſuch excellent labourers, that one alone is ſufficient to draw a plough, though the coulter enters very deep into the ground. Their fleſh is not diſagreeable; but that of the ox is better and more commonly uſed; *Hiſt. de Tonquin, par le P. de Rhodes, p.* 51.

‡ At Malabar, the buffalo is larger than the ox. He is ſhaped nearly in the ſame manner. His head is longer and flatter. His eyes are larger, and almoſt entirely white. His horns are flat, and often two feet long. His legs are thick and ſhort. He is ugly, and almoſt without hair. He walks ſlowly, and carries heavy burdens. Like the cows, they go in flocks; and their milk produces butter and cheeſe. Their fleſh is good, though leſs delicate than that of the ox. They are excellent ſwimmers, and traverſe the moſt rapid rivers. We have ſeen them tamed. But the wild buffaloes are extremely dangerous; for they tear men to pieces, or cruſh them with a ſingle ſtroke of their heads. They are leſs to be feared in the woods than in any other ſituation; for their horns often entangle among the branches, which gives thoſe time to fly who are purſued. The ſkin of theſe animals is uſed for a number of purpoſes; and even pitchers are made of it to keep water and other liquors. Thoſe on the Malabar coaſt are almoſt all wild; and ſtrangers are not prohibited from hunting and eating them; *Voyage de Dellon, p.* 110.

 becauſe

becauſe they belong to warm climates; and the large animals, in general, of theſe countries, have little or no hair.

In Africa and India, there are vaſt quantities of wild buffaloes, which frequent the banks of rivers and extenſive meadows. Theſe wild buffaloes go in flocks *, and make great havock in the cultivated fields. But they never attack men, unleſs when they are wounded. They are then extremely dangerous †; for they run ſtraight upon the enemy, overturn him, and trample him under their feet. They are, however, afraid at the ſight of fire ‡, and they abhor

* There are ſuch numbers of wild buffaloes in the Philippine iſles, that a good hunter, with a horſe and a ſpear, may kill thirty of them in a day. The Spaniards kill the buffalo for his ſkin, and the Indians for his fleſh; *Voyage de Gemelli Careri, tom.* v. *p.* 162.

† We are told by the Negroes, that, when they ſhoot at the buffaloes, without wounding them mortally, they dart with fury on the hunters, and trample them to death. . . . The Negroes watch where the buffaloes aſſemble in the evening, climb a large tree, from which they fire upon them, and deſcend not till the animals are dead; *Voyage de Boſman, p.* 437.

‡ At the Cape of Good Hope, the buffaloes are larger than thoſe of Europe. Inſtead of being black, like the latter, they are of a dark red colour. Upon the front, there is a rude tuft of curled hair. Their whole body is well proportioned, and they advance their head very much forward. Their horns are very ſhort, and hang down on the ſide of their neck; the tips bend inward, and nearly join. Their ſkin is ſo hard and firm, that it is difficult to kill them without a good firelock. Their fleſh is neither ſo fat nor ſo tender as that of ordinary oxen. The buffalo, at the Cape, turns furious at the ſight of a red garment, or upon hearing a gun diſcharged

nor a red colour. We are aſſured by Aldrovandus, and ſeveral other naturaliſts and travellers, that no perſon dare clothe himſelf in red, in countries frequented by the buffalo. I know not whether this averſion to fire and a red colour be general among the buffaloes; for it is only ſome of our oxen which are enraged at the ſight of red clothes.

The buffalo, like all the large animals of warm climates, is fond of wallowing, and even of remaining in the water. He ſwims well, and boldly croſſes the moſt rapid rivers. As his legs are longer than thoſe of the ox, he runs more ſwiftly. The Negroes of Guiney, and the Indians of Malabar, where the buffaloes are very numerous, are fond of hunting them. They never attack theſe animals openly, but watch for them on the tops of trees, or lie hid in the thickets through which the buffaloes cannot paſs on account of their horns. Theſe people eſteem the fleſh of the buffalo, and draw great profits from his ſkin and horns, which are harder and better than thoſe of the ox.

The animal called *empacaſſa* or *pacaſſa* at Congo, though very imperfectly deſcribed by travel-

charged over him. On theſe occaſions, he cries in a hideous manner, ſtrikes with his feet, turns up the earth, and runs with fury againſt the man who has ſhot, or wears a red garment. Neither fire nor water can ſtop his courſe. Nothing but a high wall, or ſome ſimilar obſtacle, is capable of reſtraining him; *Deſcript. de Bonne-eſperance, par Kolbe, tom.* iii. *chap.* 11. *p.* 25.

lers, appears to me to be the buffalo; and the animal mentioned under the name of *empabunga* or *impalunca*, in the ſame country, is, perhaps, the bubalus, whoſe hiſtory ſhall be given along with that of the gazelles or antilopes.

SUPPLEMENT.

THE ox and biſon are two diſtinct races of the ſame ſpecies. Though the biſon uniformly differs from the ox by the bunch on his back, and the length of his hair, he ſucceeds very well in the Iſle of France: His fleſh is much better than that of the European oxen; and after ſome generations, his bunch vaniſhes entirely. His hair is ſmoother, his limbs are more ſlender, and his horns longer than thoſe of the common ox. I ſaw, ſays M. de Querhoënt, biſons brought from Madagaſcar, which were of an aſtoniſhing ſize *.

The biſon, of which we here give a figure, and which we ſaw alive, was taken, when young, in the foreſts of the temperate parts of North America. It was brought to Holland, and purchaſed by a Swede, who tranſported it from town to town in a large cage, where it was

* Note communicated by M. le Vicomte de Querhoënt.

firmly

firmly fixed by the head with four ropes. The enormous mane which ſurrounds its head is not hair, but a flowing wool, divided into locks, like an old fleece. This wool is very fine, as well as that which covers the bunch, and the anterior part of the body. The parts which appear naked in the engraving, are only ſo at a certain time of the year, which is rather in ſummer than in winter; for, in the month of January, all parts of the body were almoſt equally covered with a fine, cloſe, frizled wool, under which the ſkin was of a ſooty colour; but, on the bunch, and all the other parts which are covered with longer wool, the ſkin is tawny. This bunch, which conſiſts entirely of fleſh, varies according to the plight of the animal. To us he appeared to differ from the European by the bunch and the wool only. Though under much reſtraint, he was not ferocious, but allowed his keepers to touch and careſs him.

It would appear, that there were formerly biſons in the north of Europe. Geſner even aſſerts, that, in his time, they exiſted in Scotland. Having inquired into this fact, I was informed, by letters both from Scotland and England, that no remembrance or veſtige of them could be traced in that country. Mr. Bell, in his travels from Ruſſia to China, mentions two ſpecies of oxen which he ſaw in the northern parts of Aſia; one of which was the aurochs, or wild ox, and is

the ſame race with our oxen; and the other, which we have denominated, after Gmelin, the *Tartarian*, or *Grunting Cow*, appeared to be the ſame ſpecies with the biſon. After comparing this grunting cow with the biſon, I found an exact coincidence in all the characters, except the grunting, inſtead of bellowing. But I apprehend, that this grunting is not conſtant and general, but contingent and particular, ſimilar to the deep interrupted voice of our bulls, which is never fully exhibited but in the ſeaſon of love. Beſides, I was informed, that the voice of the biſon, whoſe figure I have repreſented, was never heard, and that though conſiderably hurt, it did not complain, which induced his maſter to think that it was mute: And it is probable that its voice would be developed by grunting or interrupted ſounds, when in full poſſeſſion of freedom and in preſence of a female, the animal's ſpirits were excited by love.

It is ſingular, that the biſons, or bunched oxen, whoſe race appears to be extended in the Old Continent, from Madagaſcar and the point of Africa, and from the extremity of the Eaſt Indies as far as Siberia, and that, in the New Continent, though they are found from the country of the Ilionois to Louiſiana, and even Mexico, they ſhould never have paſſed the iſthmus of Panama; for there are no biſons in any part of South America, though the climate is perfectly

agreeable

agreeable to their nature, and the European oxen have multiplied there as well as in any other part of the globe.

At Madagaſcar, the beſt kind of bulls and cows were brought thither from Africa, and have a bunch on their backs. The cows yield ſo little milk, that a ſingle Dutch cow would give ſix times as much. In this iſland, there are wild biſons, which wander in the foreſts. The fleſh of theſe biſons is not equal to that of our oxen *. In the ſouthern parts of Aſia, we likewiſe find wild oxen. The natives of Agra hunt theſe animals on the mountain of Nerwer, which is ſurrounded with wood. This mountain is ſituated on the road from Surat to Golconda. Theſe wild cattle are generally beautiful, and ſell very dear †.

The zebu ſeems to be a miniature of the biſon, whoſe race, as well as that of the ox, has undergone great variations, eſpecially in ſize. The zebu, though an original native of very warm regions, is capable of exiſting and multiplying in temperate climates. 'I ſaw,' ſays Mr. Colinſon, 'a great number of theſe animals in 'the Duke of Richmond's, and alſo in the Duke 'of Portland's parks, where they every year 'bring forth calves, which are extremely beautiful. The fathers and mothers were brought

* Voyage de François le Guat, tom. ii. p. 71.
† Voyage de Thevenot, tom. iii. p. 113.

'from

'from the East Indies. The bunch on the 'shoulder is twice as large in the male as in the 'female, whose stature exceeds that of the male. 'The young zebu sucks its mother like other 'calves; but, in our climate, the milk of the 'mother soon dries up, and the suckling of the 'young is completed by the milk of another 'female. The Duke of Richmond ordered one 'of these animals to be slain; but its flesh was 'not so good as that of the ox *.'

Among the oxen without bunches, there are also small individuals, which, like the zebu, may constitute a particular race. Gemelli Careri, in his journey from Ispahan to Schiras, saw two small cows, which the Bashaw of the Province had sent to the King, and which exceeded not the size of calves. Though fed solely on straw, they were very fat †. In general, it appears, that the zebus, or small bisons, as well as our little oxen, are more fleshy and fatter than the bisons and oxen of the common size.

With regard to the buffaloes, we have little to add. It shall only be remarked, that, though they cannot use their horns, they are made to fight lions and tigers in the Mogul's country. These animals are very numerous in all warm climates, especially in marshy countries, and in

* Letter from the late Mr. Colinson to M. de Buffon, dated at London, December 30, 1764.

† Voyage de Gemelli Careri, tom. ii. p. 338.

the

the neighbourhood of rivers. Water, and a moiſt ſoil, ſeem to be ſtill more neceſſary to them than the warmth of a climate *. It is for this reaſon that none of them are found in Arabia, where almoſt the whole country is dry. The wild buffaloes are hunted, but with much caution; for they are exceedingly dangerous, and, when wounded, run againſt men with great fury. As to the domeſtic buffaloes, Niebuhr remarks, that, in ſome places, as at Baſra, it is the practice, when milking the female, to thruſt the hand, as far as the elbow, into the vagina, becauſe this operation makes her yield a greater quantity of milk †. This fact appears not to be probable; but the female buffalo, like ſome of our cows, may forcibly retain her milk, and this gentle kind of titillation may relax the contraction of her teats.

At the Cape of Good Hope, the body of the buffalo is of the ſame ſize with our ox; but he has ſhorter legs, and a larger head. He is a very formidable animal. He frequents the borders of the woods, and, as his ſight is not good, he remains there with his head placed near the ground, in order the better to diſtinguiſh objects among the roots of the trees. When he per-

* I formerly remarked, that the buffaloes might ſucceed in France. Attempts have lately been made to propagate them in Brandenbourg, near Berlin; *Gazette de France, June* 9, 1775.

† Deſcript. de l'Arabie, par M. Niebuhr, p. 145.

ceives any difagreeable object near him, he darts fuddenly upon it, making, at the fame time, a moft hideous bellowing; and it is very difficult on thefe occafions to efcape his fury. He is not fo much to be dreaded in the open fields. His hair is red, and black in fome places. They appear often in numerous flocks *.

* Note communicated by the Vicomte de Querhoënt to M. de Buffon.

Plate CLXX.

A. Bell Sculp.t

BUFFALO.

Plate CLXXI.

A. Bell Sculp.

BISON.

The MOUFLON *, and other SHEEP.

THE weakeſt ſpecies of uſeful animals were firſt reduced to a domeſtic ſtate. The ſheep and goat were ſubjugated before the horſe, the

* The Siberian goat has large horns bending back, cloſe at their baſe, diſtant at their points, with circular rugæ. Theſe animals vary in ſize and colour. The ſkin of the one the Britiſh muſeum did me the favour of accepting, was covered with pale ferruginous hair, on the ſides ſhort, on the top of the neck longer, and a little erect. Along the lower ſide of the neck, and on the ſhoulders, the hair was fourteen inches long. Beneath, the hair was a ſhort wool. On the knees there was a bare ſpot, as if by kneeling to lie down. The tail was very ſhort; and the horns were twenty-five inches long, eleven in girth in the thickeſt place, and one foot ſeven inches diſtant from point to point.—The horns of the females are much leſs than thoſe of the males; *Pennant's Synopſ. of Quad. p.* 18.

Mouflon is derived from the Italian word *Muſione*, the name of this animal in the iſlands of Corſica and Sardinia; in Greek, μουσμων, according to Strabo; in Latin, *Muſmon* or *Muſimon*; in Siberia, *Stepnie-barani*, that is, *wild ſheep*, according to Gmelin; and, among the Mogul Tartars, *Argali*.

Muſmon; *Plin. lib.* viii. *c.* 49. Ophion; *Id. lib.* xxviii. *c.* 9. *lib.* xxx. *c.* 15.

Tragelaphus; *Belon. Obſ. p.* 54. *Raii Synopſ. Quad. p.* 82. *Klein, Quad. p.* 20. The coat of the tragelaphus, ſays Belon, is ſimilar to that of the he-goat; but he has no beard. His horns, which do not ſhed, reſemble thoſe of a ſhe-goat; but they are ſometimes twiſted like thoſe of a ram. He has the muzzle, front, and ears of a ſheep; and his ſcrotum is likewiſe pendu-

the ox, or the camel. They were likewiſe more eaſily tranſported from one climate to another. From this ſource, all the varieties among theſe ſpecies, as well as the difficulty of diſtinguiſhing the genuine ſtock of each, have proceeded. We formerly proved, that our domeſtic ſheep, in their preſent condition, could not ſubſiſt without the ſupport of man *; from which it is apparent, that Nature never produced them as they exiſt at preſent, but that they have degenerated under our care. We muſt, therefore, ſearch among the wild animals for thoſe which make the neareſt approach to the ſheep. We muſt compare them with the domeſtic ſheep of foreign countries, examine the different cauſes which

pendulous and large. His thighs, under the tail, are white, and the tail is black. Upon the breaſt and throat the hair is ſo long that he ſeems to have a beard. The hairs upon the ſhoulders and breaſt are long and black. He has two gray ſpots, one on each ſide of the flanks. His noſtrils are black; and his muzzle, as well as the under part of his belly, are white.—*Note*, This deſcription of the tragelaphus by Belon agrees, in every eſſential character, with that we have given of the mouflon.

Muſmon, ſeu muſimon; *Geſner, Hiſt. Quad. p.* 823.

Hircus cornibus ſupra rotundatis, infra planis, ſemicirculum referentibus. . . . . Le chamois de Siberie; le chevre du Levant; *Briſſon, Quad. p.* 46.

Rupicapra cornibus arietinis, Argali; *Nov. Com. Petrop. tom.* iv. *p.* 49. 388. *tab.* 8.

Fiſhtall, Lerwee; *Shaw's Travels, p.* 243.

Capra Ammon, cornibus arcuatis, ſemicircularibus, ſubtus planiuſculis, palearibus laxis, piloſis, gula imberbi; *Linn. Syſt. Nat. p.* 97.

* See above, article *Sheep*, vol. III.

might

might introduce changes into the ſpecies, or make it degenerate, and endeavour, as in the caſe of the ox, to recall all theſe varieties, and all theſe pretended ſpecies, to one primitive race.

Our ſheep, in its preſent ſtate, exiſts no where but in Europe, and ſome of the temperate provinces of Aſia. When tranſported into warm countries, as Guiney *, it loſes its wool, and is covered with hair: Its fertility is diminiſhed, and the taſte of its fleſh is altered. In very cold countries it cannot ſubſiſt. But, in cold climates, and particularly in Iceland, we find a race of ſheep with ſeveral horns, a ſhort tail, and hard thick wool, under which, as in moſt nor-

* Ovis Africana pro vellere lanoſo pilis brevibus hirtis veſtita; hoc genus vidimus in vivario regio, Weſtmonaſterienſi, S. Jacobi dicto; quoad formam corporis externam ovibus vulgaribus perſimile, verum pro lana ei pilus fuit. . . . . Specie a noſtratibus differre non fidenter affirmaverim; fortaſſe quemadmodum homines in Nigritarum regionibus pro capillis lanam quandam obtinent, ita vice verſa pecudes hæ pro lana pilos; *Ray, Syn. Quad. p.* 75.——In the kingdom of Congo, in Loango, and Cabinda, the ſheep, inſtead of ſoft wool, are covered with coarſe hair, ſimilar to that of dogs. The extreme heat of the air, which dries up all the oily humours, is the cauſe of this coarſeneſs. I made the ſame obſervation with regard to the Indian ſheep; *Voyage de J. Ovington, tom.* i. *p.* 60.—— The ſheep are pretty numerous along the coaſt of Guiney, and yet they are very dear. They have the ſame figure with thoſe of Europe, except that they are one half ſmaller, and, inſtead of wool, are covered with hair of an inch long. . . The fleſh has not the ſmalleſt appearance of that of the European ſheep, being extremely dry, &c.; *Voyage de Boſman, p.* 237.

thern

thern animals, there is a layer of ſofter, finer, and more buſhy wool. In warm countries, on the contrary, the ſheep have generally ſhort horns and a long tail, ſome of which are covered with wool, others with hair, and others with a mixture of wool and hair. The firſt of theſe warm country ſheep, which is commonly called the *Barbary ſheep* *, or the *Arabian ſheep* †, reſembles the domeſtic kind in every reſpect, except the tail ‡, which is ſo loaded with fat,

* Perſia abounds in ſheep and goats. Some of theſe ſheep, which are called *Barbary*, or *broad-tailed ſheep*, have a tail that weighs above 30 pounds. It is a heavy burden to the poor animals, and ſtill more ſo, as it is narrow at the origin, and broad at the extremity. Some of them are ſo heavy, that the animals are unable to trail them; and the ſhepherds are obliged to fix boards with two wheels under the tail, to preſerve it from galling, &c.; *Chardin, tom.* ii. *p.* 28.

† Ovis laticauda Arabica; *Raii Synopſ. Quad. p.* 74. Moſt naturaliſts call this animal the *Arabian ſheep*. It is not, however, an original native of Arabia, nor does it belong to the Arabian race of ſheep. But they are very numerous in South Tartary, Perſia, Egypt, Barbary, and in all the Eaſtern coaſts of Africa.

Aries laniger, cauda latiſſima. . . . Ovis laticauda. La brebis à large queue; *Briſſon. Quad. p.* 50. *Linn. Syſt. Nat. p.* 97. *Nov. Com. Petrop. tom.* v. *p.* 347. *tab.* 8.

‡ Neque his arietibus ullum ab aliis diſcrimen præterquam in cauda quam latiſſimam circumferunt. . . Nonnullis libras decem aut viginti cauda pendet, cum ſua ſponte impinguantur; verum in Ægypto plurimi farciendis vervecibus intenti, furſure hordeoque ſaginant; quibus adeo craſſeſcit cauda ut ſeipſos dimovere non poſſint; verum qui eorum curam gerunt caudam exiguis vehiculis alligantes gradum promovere faciunt; vidi hujuſmodi caudam libras octuaginta pondera re. *Leon. Afric. Deſcript. Afric. vol.* ii. *pag.* 253.

that

that it is often more than a foot broad, and weighs above twenty pounds. Befides, there is nothing remarkable in this animal but its tail, which it carries as if a cufhion were fixed to its thighs. Among this race of fheep, there are fome whofe tails are fo long* and heavy, that they are obliged to be fupported by a fmall wheel machine, to enable the animals to walk. In the Levant, this fheep is covered with very fine wool; but, in warm countries, as Madagafcar, and the Indies †, it is covered with hair. The redundance of fat, which, in our fheep, fixes about the kidneys, defcends, in thefe animals, upon the vertebræ of the tail: The other parts of their bodies are lefs loaded with fat than our fed wedders. This variety fhould be attributed to the food, the climate, and the care of men; for thofe broad or long tailed fheep are domeftic like ours, and even require more care and management. This race is much more diffufed than that of the ordinary kind. It is common

* Ovis Arabica altera; *Raii Synopf. Quad. p.* 74. Aries laniger cauda longiffima.——Ovis longicauda; *Briffon. Quad. p.* 76. *Note*, Ray and Briffon have made two diftinct fpecies of thefe broad and long tailed fheep. But Linnæus has properly reduced them to one.

† The ifland of Madagafcar produces fheep with tails fo large that they weigh twenty pounds. They are loaded with fat, which does not melt, and their flefh is very delicate. The wool of thefe fheep is like goat's hair; *Voyage de Flacourt, p.* 3.—— The flefh of the wedders and young females has an excellent favour; *Idem, p.* 151.

in Tartary *, Persia †, Syria ‡, Egypt, Barbary, Æthiopia §, Mosambique ||, Madagascar **, and the Cape of Good Hope ††.

In

* The sheep of Tartary, like those of Persia, have large tails, which consist entirely of fat, and weigh from twenty to thirty pounds. Their ears are pendulous, and their nose flat; *Voyage d'Olearius, tom.* i. *p.* 321.——The sheep of East Tartary have tails which weigh from ten to twelve pounds. These tails consist of solid fat, which has an excellent relish. The bones of the vertebræ are not larger than those of our sheep; *Relation de la Grande Tartarie, p.* 187.——The sheep of Calmuck Tartary have their tails concealed in a cushion of many pounds weight; *Id. p.* 267.

† A single tail of some of the Persian sheep weighs from ten to twelve pounds, and yields five or six pounds of fat. Its figure is the reverse of that of our sheep, being broad at the extremity, and small at the origin; *Voyage de Tavernier, tom.* ii. *p.* 379.

‡ In Syria, Judea, and Egypt, the tails of the sheep are so large, that I have seen one of them weigh above thirty-three pounds, though the animals were not larger than the sheep of Berri, but much handsomer, and had finer wool; *Voyage de Villamont, p.* 629.

§ In Æthiopia, there are sheep whose tails weigh more than twenty-five pounds.——Others have tails a fathom long, and twisted like a vine branch; *Drake's Voyage, p.* 85.

|| Sunt ibi oves quæ una quarta parte abundant; integram enim ovem si quadrifide secaveris præcise quinque partibus plenarie constabit; cauda siquidem quam habent tam lata, crassa, et pinguis est, ut ob molem reliquis par sit; *Hug. Lintscot. Navig. part.* ii. *p.* 19.

** The island of Madagascar abounds in cattle.——The tails of the rams and ewes are so large, that we saw one which weighed twenty-eight pounds; *Voyage de Pyrard, tom.* i. *p.* 37.

†† In the sheep at the Cape of Good Hope there is nothing remarkable, except the length and thickness of the tail, which

In the iſlands of the Archipelago, and particularly in Crete, there is a race of domeſtic ſheep, of which Belon has given a figure and deſcription under the name of *ſtrepſicheros* *. This ſheep is of the ſame ſize with the common kind. Like the latter, it is covered with wool, and differs from them only by having erect horns chamfered in the form of a ſcrew.

In fine, we find in the warmer countries of Africa and India, a race of large ſheep with coarſe hair, ſhort horns, pendulous ears, with a kind of dewlap which hangs under the neck. This ſheep is called by Leo Africanus and Marmol, *adimain* †; and it is known to the naturaliſts under the name of the *Senegal ſheep* ‡, the

which commonly weighs from fifteen to twenty pounds. The Perſian ſheep, though ſmaller, have ſtill larger tails. I have ſeen ſome of this race at the Cape, whoſe tails weighed at leaſt thirty pounds; *Deſcript. du Cap de Bonne-Eſperance, par Kolbe, tom.* ii. *p.* 97.

* In Crete, and particularly on Mount Ida, there is a race of ſheep, which go in large flocks, and are called *ſtriphocheri*. They reſemble the common kind in every thing but their horns, which, inſtead of being twiſted, are ſtraight and chamfered like a ſcrew; *Obſerv. de Belon, p.* 15.

† *Adimain,* animal domeſticum arietem forma refert.—— Aures habet oblongas et pendulas. Lybici his animalibus pecoris vice utuntur.————Ego quondum juvenili fervore ductus horum animalium dorſo inſidens ad quartam miliarii partem delatus fui; *Leon. Afric. Deſcript. Afric. vol.* ii. *p.* 752. See alſo *l'Afrique de Marmol, tom.* i. *p.* 59.

‡ The wedders, or rather the rams of Senegal, for none of them are caſtrated, are a diſtinct and ſtrongly marked ſpecies. They have nothing of the common kind but the head and tail.

the *Guiney ſheep* *, the *ſheep of Angola*, &c. It is domeſtic, like the other kind, and ſubject to the ſame varieties. We have given figures of two of theſe ſheep, which, though they differ in particular characters, have ſo many re-

tail. From the coarſeneſs of their hair, they ſeem to be allied to the goat ——— It appears that wool would be incommodious to the ſheep in very warm climates; and that Nature has changed it into hair of a moderate length, and pretty thin; *Voyage au Senegal, par M. Adanſon, p.* 36.

African ſheep.——— It is meager, very long legged, and tall, with ſhort horns and pendant ears. It is covered with ſhort hair, inſtead of wool, and has wattles on its neck. Perhaps it is the *adimain* of Leo Africanus, p. 341. which he ſays furniſhes the Lybians with milk and cheeſe. It is of the ſize of an aſs, and ſhaped like a ram; *Pennant's Synopſ. of Quad. p.* 12.

* Aries Guineenſes, ſive Angolenſis; *Marcgrav. p.* 234. *Raii Synopſ. Quad. p.* 75.

Aries Piloſus, pilis brevibus veſtitus, juba longiſſima, auriculis longis pendulis.——— Ovis Guineenſis. La brebis de Gunée; *Briſſon. Regn. Anim. p.* 77.

Ovis Guineenſis, auribus pendulis, palearibus laxis, piloſis, occipite prominente; *Linn. Syſt. Nat. p.* 98.

Sheep of Sahara; *Shaw's Travels, p.* 241.

Carnero, or Bell wedder; *Della Valle, Trav. p.* 91.

The Guiney ſheep differ from the European kind. They are generally longer legged, and have no wool, but ſhort, ſoft hair, like that of a dog. The rams have long manes, which ſometimes hang down to the ground, and cover their necks from the ſhoulders to their ears, which are pendulous. Their horns are knobbed, pretty ſhort, ſharp, and bended forward. Theſe animals are fat; their fleſh is good, and well flavoured, eſpecially when they feed on the mountains or along the ſea coaſts; but it ſmells of tallow when they paſture on marſhy grounds. The ewes are exceedingly prolifi.——— They always bring forth two lambs at a time; *Voyage de Deſmarchais, tom.* 1. *p.* 141.

ſemblances,

ſemblances, that we muſt pronounce them to belong to the ſame race. Of all the domeſtic kinds, this race appears to approach neareſt to a ſtate of nature. It is larger, ſtronger, nimbler, and, conſequently, more capable of ſubſiſting as a wild animal. But, as it is only found in very warm climates, and cannot endure cold, and as, even in its native climate, it ſubſiſts not in a wild ſtate, but is domeſtic, and requires the aid of man, it cannot be regarded as the primitive ſtock from which all other ſheep have derived their origin.

In conſidering domeſtic ſheep, therefore, relative to the order of climate, we have, 1. The northern ſheep with ſeveral horns, and whoſe wool is extremely coarſe. The ſheep of Iceland, Gothland, Muſcovy *, and other parts of the north of Europe, have all coarſe hair, and ſeem to belong to the ſame race.

2. Our ſheep, whoſe wool is very fine and beautiful in the mild climates of Spain and Perſia, but which, in very warm countries, turns coarſe. We have already remarked the conformity between the influence of the climates of Spain and of Chorazan, a province of Perſia,

* Twenty Sileſian ſhepherds arrived at Peterſburg, and were afterwards ſent to Cazan to ſhear the ſheep, and to teach the Muſcovites the mode of preparing wool.——But this did not ſucceed; and the chief cauſe of its failure was ſaid to be owing to the coarſeneſs of the wool, the ſheep and goats having always intermixed and produced together; *Nouv. Mem. ſur l'Etat de la Moſcovie, tom.* i. *p.* 290.

 upon

upon the hair of goats, cats, and rabbits: It acts in the ſame manner upon the wool of ſheep, which is very fine in Spain, and ſtill finer in that part of Perſia *.

3. The large tailed ſheep, whoſe wool is very fine in temperate countries, ſuch as Perſia, Syria, and Egypt; but, in warmer climates, it is converted into hair more or leſs coarſe.

* At Meſchet in the country of Chorazan, on the frontiers of Perſia, lamb ſkins formerly conſtituted a great article of commerce. The fleeces were of a beautiful ſilver gray colour, all curled, and finer than ſilk: Thoſe ſheep which come from the mountains to the ſouth of this city, and from the province of Kerman, afford the fineſt wool in Perſia; *Relation de la Grande Tartarie, p.* 187.—The greateſt part of this fine wool is furniſhed by the province of Kerman, which is the ancient Caramania; and the beſt kind comes from the mountains adjacent to the town, which has the ſame name with the province. It is ſingular, that when the ſheep of theſe places have eat the new herbage from January to May, the fleeces fall entirely off, and leave the animals as bare as ſcalded pigs; ſo that there is no occaſion for ſhearing them as in France. When the fleeces are collected, they are beat or threſhed; by which operation the coarſer part ſeparates and leaves nothing but the fine.——This wool is never dyed: It is naturally of a bright brown or a gray aſh colour, and very little of it is white; *Voyage de Tavernier, tom.* i. *p.* 130.——The wedders of the Uſbeck and Beſchac Tartars have long, grayiſh wool, curled at the ends into ſmall white rings, which have the appearance of pearls. Theſe fleeces are more eſteemed than the fleſh; becauſe, next to the ſable, they are the moſt valuable furs uſed in Perſia. The animals are fed with great care, and generally in the ſhade. When obliged to be expoſed to the open air, they are covered like our horſes. The tail of theſe wedders is ſmall, like that of the common kind; *Voyage d'Olearius, tom.* i. *p.* 547.

4. The

4. The ſtrepſicheros or Cretan ſheep. They reſemble ours in every article but the horns, which are erect and chamfered in a ſpiral form.

5. The *adimain*, or large ſheep of Senegal and India, which are covered with hair more or leſs ſhort and coarſe, in proportion to the heat of the climate. All theſe ſheep are only varieties of the ſame ſpecies, and would unqueſtionably produce with each other; ſince we know from experience that the he-goat, whoſe ſpecies is more remote, produces with our ewes. But, though theſe five or ſix races of domeſtic ſheep are all varieties of the ſame ſpecies, entirely produced by difference of climate, food, and management; yet none of them appears to be the primitive ſtock or ſource of all the reſt. None of them is ſufficiently ſtrong or nimble to reſiſt the carnivorous animals, or to eſcape from them by flight. All of them equally require care and protection. Hence the whole ſhould be regarded as degenerate races, formed by the hand of man, and multiplied for his uſe. While he nouriſhed, cultivated, and increaſed theſe domeſtic races, he would neglect, injure, and deſtroy the wild race, which being ſtrong and leſs tractable, would, of courſe, be more incommodious and leſs uſeful to him. The individuals of this race, therefore, would be ſmall, and limited to ſuch deſert or thinly inhabited places as could afford them ſubſiſtence. Now, in the mountains of Greece, in the iſland of Cyprus, Sardinia, and Corſica, and in the deſerts of Tartary, we find

the animal called *moufion*, which ſeems to be the primitive ſtock of all the different varieties of ſheep. It lives in a ſtate of nature, and ſubſiſts and multiplies without the aid of man. It reſembles, more than any other wild animal, all the domeſtic kinds, and it is ſtronger, ſwifter, and more vivacious than any of them. It has the head, front, eyes, and face of the ram. It likewiſe reſembles him in the figure of the horns, and in the whole habit of the body. In fine, it produces with the domeſtic ſheep *, which alone is ſufficient to prove that it belongs to the ſame ſpecies, and is the primitive ſtock from which all the other varieties have originated. The only difference between the mouflon and our ſheep is, that the former is covered with hair, inſtead of wool. Now, we have already ſeen, that, in domeſtic ſheep, wool is not an eſſential character, but only a production of temperate climates; ſince, in warm countries, theſe ſame ſheep loſe their wool, and are covered with hair; and, in very cold regions, their wool is as coarſe as hair. Hence it is by no means ſurpriſing, that the primitive wild ſheep, which muſt have been expoſed to heat and cold, and

* Eſt et in Hiſpania, ſed maxime Corſica, non maxime abſimile pecori (ſcilicet ovili) genus muſmonum, caprino villo, quam pecoris velleri propius: Quorum e genere et ovibus natos priſci umbros vocarunt; *Plin. Hiſt. Nat. lib.* viii. *cap.* 49. From this paſſage we learn, that the mouflon has at all times produced with the ſheep. The ancients called all the mongrels animals of this race, *umbri*, *imbri*, or *ibri*.

muſt

muſt have multiplied without ſhelter in the woods and deſerts, ſhould not be covered with wool, which it would ſoon loſe among the thickets, and its nature would be changed by the continual action of the air and temperance of the ſeaſons. Beſides, when the he-goat copulates with the domeſtic ewe, the produce is a kind of mouflon; for the lamb is covered with hair, and is not an unfertile mule, but a mongrel, which riſes up toward the primitive ſpecies, and ſeems to indicate that the goat and our domeſtic ſheep have ſomething common in their origin: And, as we know from experience, that the he-goat eaſily produces with the ewe, but that the ram is incapable of impregnating the ſhe-goat, it is evident, that, among theſe animals, while in a domeſtic ſtate, the goat is the predominant ſpecies. Thus, our ſheep is a ſpecies much more degenerated than that of the goat; and it is extremely probable, that, if the ſhe-goat were ſerved with a mouflon, inſtead of a domeſtic ram, ſhe would produce kids which would approach to the ſpecies of the goat, as the lambs produced by the he-goat and ewe riſe toward the original ſpecies of the ram.

I am aware of objections to this doctrine from thoſe ſyſtematic naturaliſts, who found all their knowledge of natural hiſtory upon ſome particular characters; and, therefore, ſhall endeavour to prevent them. The firſt character, they will ſay, of the ram, is to carry wool, and the firſt character of the

the goat is to be covered with hair. The ſecond character of the ram is to have horns bended in a circular form, and turned backward, and that of the he-goat is to have them ſtraight and erect. Theſe, they will affirm, are the eſſential and infallible marks by which ſheep and goats will always be diſtinguiſhed; for they muſt acknowledge, that every other article is common to both. None of them have cutting teeth in the upper jaw; but each of them has eight in the under jaw. In both, the canine teeth are wanting; their hoofs are equally divided, and their horns are ſimple and permanent. Both have their paps ſituated in the region of the belly; and both feed upon herbage. Their internal ſtructure is ſtill more ſimilar; for it appears to be the very ſame. The number and form of their ſtomachs, the ſtructure and diſpoſition of their inteſtines, the ſubſtance of the fleſh, the qualities of the fat and ſeminal liquor, the times of geſtation and growth, and the duration of their lives, are exactly the ſame. There remain, therefore, only the wool and the horns by which theſe two ſpecies can be diſtinguiſhed. But, it has already been ſhown, from facts, that wool is not ſo much a natural ſubſtance, as a production of climate, aided by the care of man. The ſheep of warm and of cold countries, and wild ſheep, have no wool. Beſides, in very mild climates, the goats may be ſaid to have wool inſtead of hair; for that of the Angora goat is finer than the

wool of our wedders. This character, therefore, is not eſſential, but purely accidental, and even equivocal; for it may equally belong to theſe two ſpecies, or be wanting altogether, according to the difference of the climates. That of the horns appears to be ſtill leſs certain; for they vary in number, ſize, figure, and direction. In our domeſtic ſheep, the rams have generally horns, and the ewes have none. I have ſeen ſheep not only with two, but with four horns. Thoſe of the North and of Iceland have ſometimes eight. In warm countries, the rams have only two ſhort horns, and often want them, like the ewes. In ſome, the horns are ſmooth and round; in others, they are flat and chamfered. The points, inſtead of being bended backward, are ſometimes turned outward, forward, &c. This character, therefore, is not more conſtant than the former; and, conſequently, it is not ſufficient to conſtitute different ſpecies *. Neither can the

* Linnæus, with great propriety, inſtead of ſix ſpecies, has made ſix varieties only of domeſtic ſheep. 1. *Ovis ruſtica cornuta.* 2. *Anglica mutica, cauda ſcrotoque ad genua pendulis.* 3. *Hiſpanica cornuta, ſpira extrorſum tracta.* 4. *Polycerata e Gothlandia.* 5. *Africana pro lana pilis brevibus hirta.* 6. *Laticauda platyura Arabica*; *Linn. Syſt. Nat. p.* 97. All theſe ſheep are only varieties, to which this author ſhould have added the *adimain* or Guiney ſheep, and the *ſtrepſicheros* of Crete, inſtead of making them two different ſpecies. In the ſame manner, if he had ſeen the mouflon, and had known that it produced with the ſheep, or had only conſulted the paſſage of Pliny concerning the mouflon, he would never have ranked it with the goat,

the thickneſs or length of the tail anſwer this purpoſe; ſince it may be conſidered as an artificial member, which, by great care and abundance of good nouriſhment, may be enlarged at pleaſure. Beſides, among our domeſtic races, as in certain Britiſh ſheep, there are ſome which have tails longer than the common kind. Our modern naturaliſts, however, truſting ſolely to the differences in the horns, the wool, and the largeneſs of the tail, have made ſeven or eight diſtinct ſpecies out of the ſheep-kind. The whole of theſe we have reduced to one. And this reduction ſeems to be ſo well founded, that there is little proſpect of its being overturned by future obſervations.

In compoſing the hiſtory of wild animals, we found it convenient to examine them one by one, without any regard to genus, but, in the domeſtic animals, on the contrary, it was neceſſary not only to adopt, but to increaſe the number of genera; becauſe in Nature there exiſt only individuals, and ſucceſſions of individuals, that is, ſpecies. Men have had no influence on independent animals; but they have greatly altered and modified the domeſtic kinds. We have, therefore, eſtabliſhed phyſical and real genera,

goat, but with the ſheep. Briſſon has not only placed the mouflon and ſtrepſicheros, which he calls *hircus laniger*, among the goats, but he has made four diſtinct ſpecies of domeſtic ſheep covered with wool, beſide the domeſtic ſheep of warm countries covered with hair, and the broad and long tailed ſheep. All theſe ſeven we have reduced to a ſingle ſpecies.

very

very different from thoſe metaphyſical and arbitrary ones, which have no exiſtence but in idea. Theſe phyſical genera are, in reality, compoſed of all the ſpecies, which, by our management, have been greatly variegated and changed; and, as all thoſe ſpecies, ſo differently modified by the hand of man, have but one common origin in Nature, the whole genus ought to conſtitute but a ſingle ſpecies. In writing, for example, the hiſtory of tigers, we have admitted as many ſpecies as are really found in different parts of the earth; becauſe we are certain that man has never introduced any changes among theſe untractable and ferocious animals, who ſubſiſt at preſent in the ſame manner as they were originally produced by Nature. The ſame remark applies to all free and independent animals. But, in compoſing the hiſtory of oxen and ſheep, we have reduced all the varieties of the oxen to one ox, and all the varieties of the ſheep to one ſheep; becauſe it is equally certain that Man, and not Nature, has produced the different kinds which we have enumerated. Every thing concurs in ſupporting this idea, which, though clear in itſelf, may not, perhaps, be ſufficiently underſtood. That all the oxen produce together, we are aſſured by the experiments of M. de la Nux, Mentzelius, and Kalm: That all the ſheep produce with one another, with the mouflon, and even with the goat, I know from my own experience. All the varieties of oxen, therefore, form but one

ſpecies; and all the ſheep, however numerous their varieties, conſtitute only another ſpecies.

I am obliged, by the importance of the ſubject, to repeat, that Nature is not to be judged of by particular minute characters, and that by theſe the differences of ſpecies are not to be determined; that methodical diſtributions, inſtead of throwing light on the hiſtory of animals, render it ſtill more obſcure, by a fruitleſs multiplication of denominations, and of ſpecies; by forming arbitrary genera, which Nature never knew; by confounding real beings with creatures of imagination; by giving falſe ideas of the eſſential characteriſtics of ſpecies; and by mixing or ſeparating them in an arbitrary manner, without ſkill, and often without having examined or even ſeen the individuals. It is for this reaſon that our nomenclators perpetually deceive themſelves, and publiſh nearly as many errors as lines. Of this we have already given ſo many examples, that nothing but the blindeſt and moſt obſtinate prejudice can poſſibly reſiſt the evidence they afford. On this ſubject M. Gmelin talks very ſenſibly, when treating of the animal under conſideration *.

We

* 'The *argali*, or *ſtepnie-barani*, which occupy,' ſays he, 'the ſouthern mountains of Siberia, from the river Irtis, as far as Kamtſchatka, are extremely vivacious animals; and this vivacity ſeems to exclude them from the claſs of ſheep, and to rank them with that of the ſtags. I ſhall here give a ſhort deſcription of them, from which it will appear, that neither

We are convinced, as M. Gmelin remarks, that we can never acquire a knowledge of Nature,

neither ſprightlineſs, nor inactivity, neither the wool nor hair with which an animal is covered, neither crooked nor ſtraight horns, neither permanent horns nor thoſe which fall off annually, are marks ſufficiently characteriſtic to diſtinguiſh claſſes. Nature loves variety; and I am perſuaded, that, if we knew better how to manage our ſenſes, they would often lead us to more eſſential characters, with regard to the differences of animals, than we generally derive from reaſon, which ſeldom apprehends thoſe marks but in a ſuperficial manner. In this animal, the external form of the head, neck, and tail, correſponds with that of the ſtag. His vivacity, alſo, as formerly remarked, is ſo great, that he ſeems to be ſtill more wild than the ſtag. The individual I ſaw, though reputed to be only three years old, ten men durſt not attack. The largeſt of this ſpecies are about the ſize of a fallow deer. The one I examined meaſured, from the ground to the top of the head, a Ruſſian ell and a half in height. His length, from the root of the horns, was an ell and three quarters. The horns riſe above and very near the eyes, and juſt before the ears. They firſt bend backward and then forward in a circular form. The tips turn upward and outward. The horns, from the root to the middle, are furrowed, but afterward become ſomewhat ſmoother. It is probably from the figure of the horns that the Ruſſians have called this animal the *wild ſheep*. If we can truſt the natives of theſe provinces, his whole ſtrength lies in his horns. They ſay that the rams of this ſpecies fight by ſtriking each other with their horns; and, when any of them are knocked off, the aperture of the baſe is ſo large, that the young foxes frequently take ſhelter in the cavity. It is not difficult to eſtimate the force neceſſary to break off one of theſe horns, ſince they, as long as the animal lives, continue to augment both in thickneſs and in length; and the part of the head alſo from which they ſpring becomes always harder. It is ſaid, that a well grown horn, comprehending the curvatures, meaſures two ells in length; that it weighs between thirty and

ture, but by a judicious uſe of our ſenſes, by ſee-
ing, examining, comparing, and, at the ſame
time,

and forty Ruſſian pounds; and that, at the baſe, it is ſeven or eight inches in diameter. The horns of the one I ſaw were of a whitiſh yellow colour; but they turn browner and blacker as the animal advances in years. He carries his ears, which are pointed and tolerably large, very erect. The hoofs are divided, and the fore legs are three quarters of an ell long, and the hind legs ſtill longer. When the animal ſtands erect on a plain, his fore legs are always fully extended and ſtraight, and thoſe behind are crooked; and this curvature ſeems to diminiſh in proportion to the inequality of the ground over which he paſſes. On the neck there are ſome pendulous folds. The colour of the body is grayiſh mixed with brown. Along the back, there is a yellowiſh or rather reddiſh line; and the ſame colour appears behind, on the inſide of the legs, and on the belly, where it is a little paler. This colour continues from the beginning of Auguſt till the ſpring, at the approach of which theſe animals caſt their hair, and become every where more red. They caſt their hair a ſecond time about the end of July. This deſcription applies to the males. The females are always ſmaller; and though they have ſimilar horns, they are ſmaller and thinner, and even acquire not thickneſs with age. The horns are nearly ſtraight, have no furrows, and much reſemble thoſe of our caſtrated he-goats.

In the internal parts, they reſemble other ruminating animals. The ſtomach is compoſed of four different cavities, and the gall-bladder is conſiderably large. Their fleſh is good, and has nearly the ſame taſte with that of the roebuck. The fat is delicious, according to the teſtimony of the Kamtſchatkan nations. They feed upon herbage. They couple in autumn, and bring forth one or two lambs in the ſpring.

By the hair, the taſte of the fleſh, the figure and vivacity of this animal, it belongs to the claſs of the ſtag. By the permanent horns, it is excluded from this claſs. The circular horns give it ſome reſemblance to the ſheep. It is diſtinguiſhed from that animal by its vivacity and want of wool. Its hair, its abode upon high rocks, and its frequent combats, make

time by denying ourſelves the liberty of fabricating methodical diſtributions, contemptible ſyſtems, in which animals are claſſed which the authors never ſaw, and knew nothing more of them than their names, which are often ambiguous, obſcure, and miſapplied. The falſe employment of theſe names confounds ideas in a farrago of words, and drowns truth in a torrent of error. We are likewiſe convinced, after examining the mouflon alive, and comparing him with Gmelin's deſcription, that the argali is the ſame animal. We formerly remarked, that this animal was found in Europe, and in pretty warm countries, ſuch as Greece *, the iſland of Cyprus †, Sardinia,

make it approach to the goats. But the crooked horns, and the want of a beard, exclude it from this claſs. Should we not rather regard this animal as conſtituting a particular claſs, and recogniſe it as the *muſimon* of the ancients? In a word, it has a ſtrong reſemblance to Pliny's deſcription of the muſimon, and ſtill more to that given by the learned Geſner;" *Relation d'un Voyage par Terre à Kamtſchatka, par Gmelin.* This curious relation is written by a man of good ſenſe, and much verſed in natural hiſtory.

* The tragelaphus of Belon is unqueſtionably our mouflon; and we perceive, from his remarks, that he ſaw, deſcribed, and drew a figure of this animal in Greece, and that it is found in the mountains between Macedonia and Servia.

† In the Iſland of Cyprus, there are rams denominated by the ancient Greeks, according to Strabo, *muſmones*, and called by the preſent Italians *muſione*. Inſtead of wool, they are covered with hair, like that of goats; or rather their ſkin and hair differ little from thoſe of the ſtag. Their horns reſemble thoſe of rams; but they are bent backward. They are as tall and as large as a middle ſized ſtag. They run with great

nia, and Corſica *. But it is ſtill more numerous in the ſouthern mountains of Siberia, under a climate rather cold than temperate, where it even appears to be larger, ſtronger, and more vigorous. Hence it might equally ſupply the north and the ſouth: Its offspring might be rendered domeſtic. After ſuffering long the hardſhips of this ſtate, it would degenerate; and, according to the differences of climate and treatment, would aſſume relative characters, and new habits of body, which, being afterward tranſmitted by generation, gave riſe to our domeſtic ſheep, and all the other races formerly enumerated.

SUPPLEMENT.

WE have given the figure of a ram which was ſhown at the fair of St. Germain, in the year 1774,

great ſwiftneſs; but they never quit the higheſt and moſt rugged mountains. Their fleſh is good and ſavoury. . . . . The ſkins of theſe animals are dreſſed, and ſent to Italy, where they go by the name of *cordoani* or *corduani*; *Deſcript. des Iſles de l'Archipel, par Dapper*, *p.* 50.

* His in inſulis (Sardinia et Corſica) naſcuntur arietes qui pro lana pilum caprinum producunt, quos muſmones vocitant; *Strabo, lib.* v.—Nuper apud nos Sardus quidam vir non illiteratus Sardiniam affirmavit abundare cervis, apris, ac damis, et inſuper animali quod vulgo muflonem vocant, pelle et pilis (pilis capreæ, ut ab alio quodam accepi, cætera fere ovi ſimile) cervo ſimile; cornibus arieti, non longis ſed retro circa aures reflexis, magnitudine cervi mediocris, herbis tantum vivere, in montibus aſperioribus verſari, curſu velociſſimo, carne venationibus expedita; *Geſner, Hiſt. Quad. p.* 823.

1774, under the name of the *ram of the Cape of Good Hope*. This ſame ram was exhibited, the year preceding, under the denomination of the *Mogul ram with a thick tail.* But we learned that it was purchaſed at Tunis; and we think it is the ſame with the Barbary ſheep formerly repreſented, from which it differs only by the ſhortneſs of its tail, which is alſo flatter, and broader in the upper part. The head is likewiſe proportionally thicker, and reſembles that of the Indian ram. The body is well covered with wool, and the legs are ſhort, even when compared with thoſe of our ſheep. The figure and ſize of the horns differ little from thoſe of the Barbary ſheep. We have called it the *ram of Tunis*, to diſtinguiſh it from the other; but we are perſuaded that they both belong to the ſame country of Barbary, and that they are very nearly of the ſame race.

We have likewiſe given the figure of a ram, which was exhibited at the fair of Saint-Germain, in the year 1774, under the name of the *morvant of China*. This ram is remarkable for a kind of mane on his neck, and for long hairs which hang down from his throat, and form a kind of cravat. Theſe hairs are a mixture of red and gray, hard to the touch, and about ten inches long. The hairs of the main are red, not very thick, extend as far as the middle of the back, and are of the ſame colour and conſiſtence with thoſe on the throat; but they are ſhorter,

 and

and mixed with ſome brown and black hairs. The wool which covers the body is a little curled, and ſoft at the extremity; but near the ſkin of the animal it is ſtraight and hard: In general, it is about three inches long, and of a bright yellow colour. The legs are of a deep red, and the head is ſpotted with different ſhades of yellow. The greateſt part of the tail is yellow and white, and in figure reſembles that of a cow, being well furniſhed with hair toward the extremity. This ram ſtands lower on his legs than the common kinds, and he reſembles the Indian ram more than any other. His belly is very large, and not above fourteen inches nine lines raiſed from the ground. M. de Seve, who deſcribed this animal, adds, that, from the groſſneſs of the belly, this ram had the appearance of a pregnant ewe. The horns are nearly the ſame with thoſe of our rams. But the hoofs are not prominent, and they are longer than thoſe of the Indian ram.

We formerly remarked, and now repeat, that the mouflon is the primæval ſtock of all the other ſheep, and that his conſtitution is ſufficiently robuſt to enable him to ſubſiſt in cold, temperate, and warm climates. The wild rams of Kamtſchatka, ſays M. Steller, have the air of a goat and the hair of a rain deer. Their horns are ſo large, that ſome of them weigh from twenty-five to thirty pounds. Spoons and other utenſils are made of them. Theſe rams are as active and nimble as roebucks. They inhabit the

Plate CLXXII.

A Bell Sculp^t

MUFFLON.

Plate CLXXIII.

A Bell Sculp.t

ICELAND RAM.

Plate CLXXIV.

A Bell Sculp.

ICELAND EWE.

Plate CLXXV.

BARBARY WEDDER.

Plate CLXXVI.

INDIAN RAM.

Plate CLXXVII.

A. Bell Sculp[t].

INDIAN RAM.

Plate CLXXVIII.

A. Bell Sculp.t

INDIAN EWE.

Plate CLXXIX.

A.Bell Sculp.t

RAM of TUNIS.

Plate CLXXX.

MORVANT

the precipices of the moſt rugged mountains. Their fleſh is exceedingly delicate; but they are hunted chiefly for the ſake of their furs.

I believe that few of the genuine mouflons now exiſt in Corſica. The frequent wars which happened in that iſland have probably accompliſhed their deſtruction. But, in the figure of their preſent races of ſheep, we ſtill find marks of the former exiſtence of the mouflon. In the month of Auguſt 1774, we ſaw a Corſican ram, which belonged to the Duc de Vrilliére. It exceeded not the ſize of a French ſheep. It was white, low on its legs, and had long hair diſpoſed in locks. It had four large horns, the upper two being more bulky than the under, and they had rugoſities like thoſe of the mouflon.

THE AXIS*.

THIS animal being known only under the vague names of *Sardinian hind* and *Stag of the Ganges*, we have preserved the appellation given to it by Belon †, which he borrowed from Pliny,

* Deer with ſlender trifurcated horns; the firſt branch near the baſe, and the ſecond near the top, each pointing upwards. It is of the ſize of the fallow deer, of a light gray colour, and the body is beautifully marked with white ſpots. Along the lower part of the ſides next the belly, is a line of white. The tail, which is as long as that of a fallow deer, is red above, and white beneath; *Pennant's Synopſ. of Quad. p.* 51.

Axis; *Plinii, lib.* viii. *cap.* 21. *Belon. Obſ. p.* 119. *Raii Synopſ. Quad. p.* 88.

Speckled deer; *Nieuhoff. Voy. p.* 262.

Biche de Sardaigne; *Mem. pour ſervir à l'Hiſt. des Animaux, part.* ii *p.* 73. *tab.* 45.

† "In the court of this caſtle, there were a male and a female of a kind of *ſtag* or *fallow deer*, which we ſhould never have recogniſed, if we had not ſuſpected that it was the *axis* mentioned by Pliny, (*lib.* viii. *cap.* 21.) in the following words; *In India . . . . et feram nomine Axim, hinnuli pelle, pluribus candidioribuſque maculis, ſacram Libero Patri.* Both of them wanted horns, and, like the fallow deer, had a long tail that hung as low as the hocks, by which we knew that they were not ſtags; and, in fact, at firſt ſight, we thought they were fallow deer. But, upon a cloſer examination, we rejected this opinion. The female is ſmaller than the male; and their ſkin was variegated with round, white ſpots. The ground colour of the body was yellowiſh, and white on the belly. In this article they differ from the camelopard; for the ground colour of the camelopard is white, and the ſpots are reddiſh. Their voice is clearer than that

Pliny, both becauſe the characters correſpond with Pliny's axis, and the name has never been applied to any other quadruped; and, therefore, we are in no danger of falling into error or confuſion; for a generic denomination, accompanied with an epithet derived from the climate, is not a name, but a phraſe by which an animal may be confounded with others of its own genus, as the preſent animal with the ſtag, though, perhaps, it is different both in ſpecies and in climate. The axis is one of the ſmall number of ruminating animals which carry horns, like thoſe of the ſtag. He has the ſtature and ſwiftneſs of the fallow deer. But, what diſtinguiſhes him from both, he has the horns of the ſtag, and the figure of the fallow deer; his whole body is marked with white ſpots, elegantly diſpoſed, and ſeparate from each other; and, laſtly, he is a native of warm climates *. But the hair of the ſtag

that of the ſtag; for, having heard them bray, we were certain that they could neither be fallow deer nor ſtags, and, therefore, believed them to be the *axis* of the ancients; *Belon, Obſerv. p.* 119.

* This animal was in the royal menagery, under the name of the *Ganges ſtag*. From this denomination, as well as from the paſſages of Pliny and Belon, it appears that he is a native of warm countries. The teſtimonies of travellers, which we are about to quote, confirm this fact, and at the ſame time prove, that the common ſpecies of the ſtag is not much diffuſed beyond the temperate climates. 'I never ſaw,' ſays le Maire, 'ſtags at Senegal with horns like thoſe of France;' *Voyage de le Maire, p.* 190.—'In the peninſula of India, on this 'ſide the Ganges, there are ſtags whoſe bodies are all interſperſed

ſtag and fallow deer is generally of a uniform colour, and they are very numerous in cold and temperate regions, as well as in warm climates.

The gentlemen of the Academy of Sciences have given a figure and a deſcription of the internal parts of this animal *; but they have ſaid little concerning its external form, and nothing relative to its hiſtory. They have ſimply called it the *Sardinian hind*, probably becauſe it was brought to the royal menagery under that name. But we have no evidence of this animal's being a native of Sardinia. It is mentioned by no author as exiſting wild in this iſland: On the contrary, we ſee, from the paſſages already quoted, that it is found in the warmeſt countries of Aſia. Hence the denomination of *Sardinian hind* has been falſely applied: That of *Ganges ſtag* would have been more proper, if it had belonged to the

'ſperſed with white ſpots;' *Voyage de la Compagnie des Indes de Hollande, tom.* iv. *p.* 423.—'At Bengal, we find ſtags which 'are ſpotted like tigers;' *Voyage de Luillier, p.* 54.

* The height of theſe hinds, from the top of the back to the tail, was two feet eight inches. The neck was a foot long, and the hind legs three feet. Their hair was of four colours; namely, yellow, white, black, and gray. It was white on the belly and on the inſide of the thighs and legs. The back was a yellowiſh brown, and the flanks were of a dun yellow, or Iſabella colour. Theſe ground colours were variegated with white ſpots of different figures. Along the back were two rows of ſpots in a ſtraight line; the other ſpots were ſcattered without any order. On each ſide of the flanks there was a white line. The neck and head were gray; the tail was all white below, black above, and the hair of it was ſix inches long; *Mem. pour ſervir à l'Hiſt. des Animaux, part.* ii. *p.* 73.

ſtag ſpecies, becauſe that part of India, through which the Ganges runs, appears to be its native country. It ſeems, however, to be likewiſe found in Barbary *, and it is probable that the ſpotted fallow deer of the Cape of Good Hope is the ſame animal †.

We formerly remarked, that no ſpecies ‡ made ſo near an approach to another, as the fallow deer to the ſtag. The axis, however, ſeems to form an intermediate ſhade between the two. It reſembles the fallow deer in the ſize of the body, the length of the tail, and in a kind of livery which it perpetually wears: There is no eſſential difference but in the horns, which want brow antlers, and reſemble thoſe of the ſtag. The axis, therefore, may be a variety only, and not a different ſpecies from that of the fallow deer; for, though it is a native of the warmeſt countries of Aſia, it eaſily ſubſiſts and multiplies in Europe. There are flocks of them in the menagery of Paris. They produce among themſelves with equal facility as the fallow deer.

* The Arabs call a ſpecies of fallow deer *Bekker-el-Waſh*, which has the horns of a ſtag, but is not ſo large. Thoſe which I ſaw had been taken in the mountains near Sgigata, and appeared to be of a mild and tractable diſpoſition. The female had no horns, &c.; *Shaw's Travels*.

† We ſaw, at the Cape of Good Hope, a kind of ſpotted fallow deer, which were ſomewhat ſmaller than thoſe of Europe. . . . Their ſpots were white and yellow. They always go in flocks; *Deſcript. du Cap de Bonne-eſperance, par Kolbe, tom.* i. *p.* 120.

‡ See the article *Fallow Deer*, vol. iv. of this work.

They

They have never been obſerved, however, to intermix with the fallow deer, nor with the ſtags, which has led us to preſume that they are not a variety either of the one or of the other, but a diſtinct intermediate ſpecies. But, as no deciſive experiments have been made on this ſubject, as no neceſſary means have been uſed to oblige theſe animals to join, we do not aſſert poſitively that they belong to different ſpecies.

We have already ſeen, under the article *ſtag* and *fallow deer*, how liable theſe animals are to varieties, eſpecially in the colour of their hair. The ſpecies of the fallow deer and ſtag, without being numerous in individuals, are very much diffuſed. Both are found in either Continent, and both are ſubject to a great number of varieties, which ſeem to form permanent races. The white ſtags, whoſe race is very ancient, ſince they are mentioned by the Greeks and Romans, and the ſmall brown ſtags, which we have called *Corſican ſtags*, are not the only varieties of this ſpecies. In Germany, there is another race, known in that country under the name of *Brandhirtz* *, and by our hunters under that of the *ſtag of Ardennes*. This ſtag is larger than the common kind, and differs from the others not

* Alterum cervi genus, ignotius, priore majus, pinguius, tum pilo denſius et colore nigrius; unde Germanis a ſemiuſti ligni colore *Brandhirtz* nominatur: Hoc in Miſenæ ſaltibus Boëmiæ vicinis reperitur; *Fabricius, apud Geſner, Hiſt. Quad. p.* 297.

only by its deeper and almoſt black colour, but by long hair between the ſhoulders and on the throat. This kind of mane and beard give him ſome relation, the firſt to the horſe, and the ſecond to the he-goat. The ancients beſtowed on this ſtag the compound names of *hippelaphus* and *tragelaphus*. As theſe denominations have occaſioned many critical diſcuſſions, in which the moſt learned naturaliſts by no means agree, and as Geſner *, Caius, and others, tell us that the *hippelaphus* was the rain deer, we thought it proper here to give the reaſons which induce us to think differently, and lead us to believe, that the hippelaphus of Ariſtotle is the ſame animal with the tragelaphus of Pliny, and that both theſe names equally denote the ſtag of Ardennes.

Ariſtotle † gives to his hippelaphus a kind of mane upon the neck and top of the ſhoulders, a beard

* Geſner. Hiſt. Quad. p. 491 et 492.

† Quinetiam hippelaphus ſatis jubæ ſummis continet armis, qui a forma equi et cervi, quam habet compoſitam, nomen accepit, quaſi equicervus dici meruiſſet. . . . Tenuiſſimo jubæ ordine a capite ad ſummos armos crineſcit. Proprium equicervo villus qui ejus gutturi, modo barbæ, dependet. Gerit cornua utrinque, excepta fœmina, ... et pedes habet biſculcos. Magnitudo equicervi non diſſidet a cervo. Gignitur apud Arachotas, ubi etiam boves ſylveſtres ſunt, qui differunt ab urbanis, quantum inter ſues urbanos et ſylveſtres intereſt. Sunt colore atro, corpore robuſto, rictu leviter adunco; cornua gerunt reſupinatiora. Equicervo cornua ſunt *Capræ* proxima; *Ariſt. Hiſt. Anim. liv.* ii. *cap.* i. *Nota*, Theodore Gaza, whoſe Latin verſion we have quoted, has falſely tranſlated Δορκας *capra*, inſtead of *caprea*. Hence the word *capreæ* ſhould be ſubſtituted for *capræ*, that is, the *roe deer*, in place

beard under the throat, horns to the male ſimilar to thoſe of the roebuck, and no horns to the female. He ſays, that the hippelaphus is as large as the ſtag, and is produced among the Arachotas, a people of India, where there are alſo wild oxen, whoſe bodies are very robuſt, their ſkin black, their muzzle elevated, and their horns bended more backward than thoſe of the domeſtic ox. It muſt be acknowledged, that Ariſtotle's characters of the hippelaphus will apply almoſt equally well to the rain deer and to the ſtag of Ardennes. They have both long hair upon the neck and ſhoulders, and likewiſe on the throat, which forms a kind of beard upon the gullet, and not on the chin. But the hippelaphus, which is of the ſize of the ſtag only, differs in this particular from the rain deer, which is much larger; but, what appears to decide this queſtion, the rain deer, being an animal peculiar to cold countries, never exiſted among the Arachotas. This country of the Arachotas is one of the provinces which Alexander over-ran in his expedition into India. It is ſituated beyond Mount Caucaſus,

place of the *ſhe-goat*. The wild oxen, here mentioned by Ariſtotle, appear to be buffaloes. The ſhort deſcription he has given of them, the climate, their reſemblance to the ox, and their black colour, have made this philoſopher believe that they differed not more from the domeſtic oxen, than the wild boar from the common hog. But, as we formerly remarked, the buffalo and ox are two diſtinct ſpecies. If the ancients have beſtowed no particular name on the buffalo, it is becauſe this animal was a ſtranger to them, becauſe their knowledge of him was imperfect, and they regarded him as a wild ox, which differed from the domeſtic ox by ſome ſlight varieties only.

between

between Persia and India. This warm country never produced rain deer; for they cannot subsist in temperate countries, and are found only in the northern regions of both Continents. The stags, on the contrary, have no particular attachment to the north; for they are very numerous both in temperate and warm climates. Hence the hippelaphus of Aristotle, which is found among the Arachotas, and in the same countries with the buffalo, is unquestionably the stag of Ardennes, and not the rain deer.

Now, if we compare what Pliny has said of the tragelaphus, with what Aristotle has advanced concerning the hippelaphus, and both with nature, we will perceive that the tragelaphus is the same animal with the hippelaphus, and consequently the same with our stag of Ardennes. Pliny remarks *, that the tragelaphus belongs to the species of stag, and differs from him only by the beard and the hair on its shoulders. These characters are positive, and can apply only to the stag of Ardennes; for Pliny, in another place, mentions the rain deer under the name of *Alca*. He adds, that the tragelaphus is found in the neighbourhood of Phasis, which still farther agrees with the stag, and not with the rain deer. We may, therefore, safely pronounce, that the tragelaphus of Pliny, and the hippelaphus of Aristotle, both denote the animal which we call

* Eadem est specie (cervi videlicet) barba tantum, et armorum villo distans quem *tragelaphon* vocant, non alibi quam juxta Phasin amnem, nascens; *Plin. Hist. Nat. lib.* viii. *cap.* 33.

the

the *ſtag of Ardennes* ; and that the axis of Pliny is the animal commonly denominated the *Ganges ſtag*. Though names have no influence upon nature, the explication of them is of great uſe to thoſe who ſtudy her productions.

SUPPLEMENT.

IN the year 1765, the Duke of Richmond had in his parks a number of that ſpecies of the fallow deer, commonly known by the name of *Ganges ſtags*, and which I have called *axis*. Mr. Colinſon aſſures me, that they propagated with the ordinary kind of fallow deer.

'They live ſpontaneouſly,' he remarks, 'with 'the fallow deer, and form not ſeparate flocks. 'It is more than ſixty years ſince this ſpecies 'exiſted in England, where they had been tranſ-'ported before the white and black fallow deer, 'and even before the ſtag, which laſt, I ſuppoſe, 'was brought from France; becauſe, previous 'to that period, there were in England only the 'common fallow deer, and the Scottiſh roebuck. 'But, beſide this firſt ſpecies, we have now the 'axis, the black, the yellow, and the white fal-'low deer. The mixture of all theſe colours 'has produced moſt beautiful varieties *.'

In the year 1764, we had a male and female Chineſe fallow deer at the menagery of Verſailles.

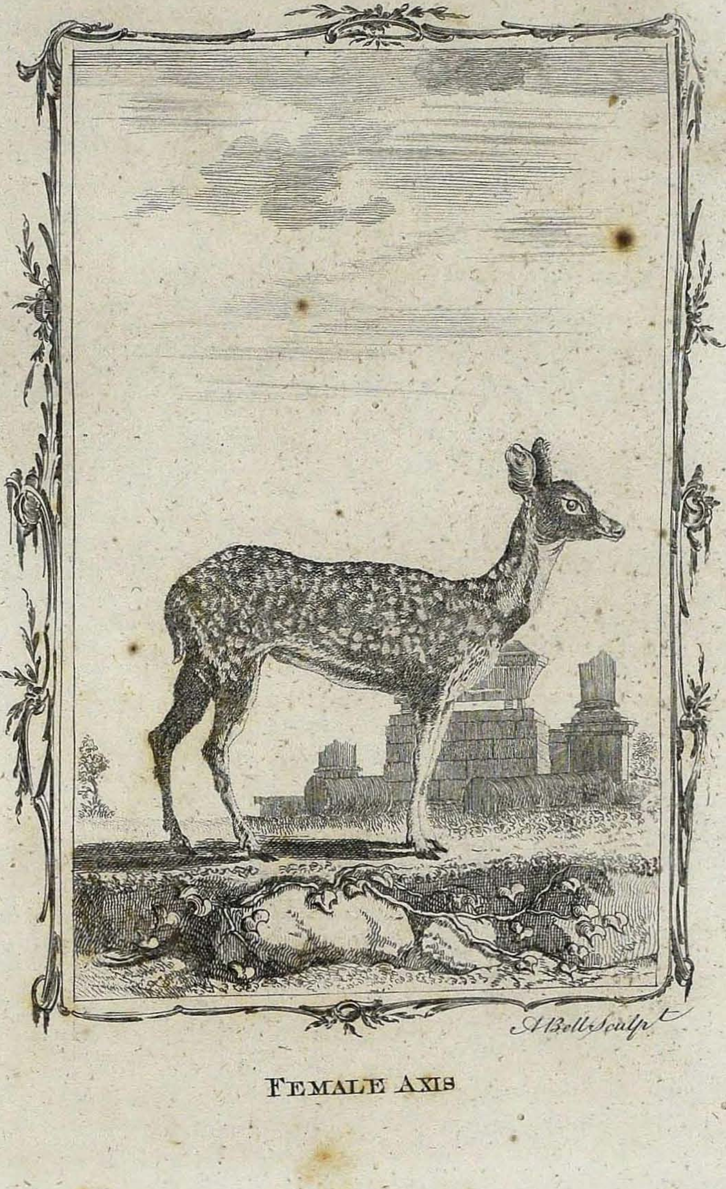
* Lettre de M. Colinſon à M. de Buffon.

In

Plate CLXXXI.

AXIS

Plate CLXXXII.



A Bell Sculpt

FEMALE AXIS

In height, they exceeded not two feet four inches. The body and tail were of a dark brown colour, and the belly and limbs of a bright yellow. The legs were ſhort, the horns large and garniſhed with antlers. This ſpecies, though ſmaller than the common fallow deer, and even than the axis, is perhaps a variety only of the latter, though it has no white ſpots; but inſtead of theſe white ſpots, it had, in ſome places, large yellow hairs, which had a conſiderable effect upon the brown colour of the body. In fine, the colour of the female was the ſame as that of the male; and, it is probable, that the race might not only be perpetuated in France, but that it might even intermix with the axis, eſpecially as both theſe animals are natives of the eaſtern regions of Africa.

The ZEBU, or DWARF OX*.

THIS ſmall ox was mentioned above under the article Buffalo, p. 164. But as, ſince that article was printed, a zebu has been brought to the royal menagery, we are now in a condition to ſpeak of it with more certainty, and to give a figure of it drawn from the life, with a more perfect deſcription than the former one.

* The zebu from which the following deſcription was taken, was not larger than a calf of five weeks old. We knew it, however, to be an adult, and at leaſt ſeven or eight years of age, by inſpection of its teeth. It arrived at the menagery of Verſailles in the month of Auguſt 1761, and its horns were then as large as they are now in the year 1763. They are five inches three lines long, and four inches three lines in circumference at the baſe. They are black at the points, and in every other reſpect reſemble thoſe of the common ox. It has a bunch on the withers four inches and a half high, and its circumference at the baſe is ſixteen inches. In other articles, it differs not in figure from our ox, except that its legs and feet are proportionally ſmaller, and its ears longer.

The tuft of hair above the coronet is black. The legs and upper part of the tail are yellowiſh. The under part, and the long hairs at the point of the tail, are white, and a foot in length. The reſt of the body is variegated with black and brown ſpots, of different dimenſions, and ſlightly tinged with a reddiſh colour.

" Dwarf ox, with horns almoſt cloſe at their baſe, broad and flat at the beginning, receding in the middle, and ſtanding erect. It is larger than a roebuck, leſs than a ſtag, and compact, and well made in all its limbs. Its hair is ſhining, and of a tawny colour. Its legs are ſhort, neck thick, and ſhoulders

one. I have alſo learned, from freſh inquiries, that the zebu is probably the ſame animal which is called the *lant* *, or *dant* †, in Numidia, and ſeveral other northern provinces of Africa, where it is very common; and that the name *dant*, which ſolely pertains to the animal under conſideration, has been tranſported from Africa to America, and given to an animal which has no reſemblance to the former but in the ſize of its body, and belongs to a very different ſpecies.

ſhoulders a little elevated. The tail is terminated with long hairs, twice as coarſe as thoſe of a horſe. It is only a variety of the Indian ox;" *Pennant's Synopſ. of Quad. p.* 9.

Un moult beau petit bœuf d'Afrique; *Belon, p.* 119.

Bos cornibus aure brevioribus, dorſo gibbo, juba nulla; *Linn. Syſt. Nat. p.* 99.

* *Lant* bovem ſimilitudine refert, minor tamen cruribus et cornibus elegantius; colorem album gerit, unguibus nigerrimis; tantæque velocitatis ut a reliquis animalibus, præterquam ab equo Barbarico, ſuperari nequeat. Facilius æſtate capitur quod arenæ æſtu curſus velocitate ungues dimoveantur, quo dolore affectus curſum remittit, &c.; *Leonis Afric. Africæ Deſcript. vol.* ii. *p.* 751.

† The dant, which the Africans call *lampt*, is of the figure of a ſmall ox, but its legs are ſhort.——It has black horns, which bend round, and are ſmooth, Its hair is whitiſh, and its hoofs are black and cloven. It is ſo ſwift that no animal, unleſs the Barbary horſe, can overtake it. Theſe animals are ſaid to be more eaſily taken in ſummer; becauſe, by the force of running, their hoofs are worn among the burning ſands, and the pain occaſioned by this circumſtance makes them ſtop ſhort, like the ſtags and fallow deer of theſe deſerts. There are numbers of theſe dants in the deſerts of Numidia and Lybia, and particularly in the country of the Morabitains. Of their ſkins the natives make excellent ſhields, the beſt of which are proof againſt arrows.

cies. This American dant is the tapir or the maipouri; and, to prevent the African dant, which is our zebu, from being confounded with the tapir, we ſhall give the hiſtory of the latter in the ſubſequent article.

Plate CLXXXIII.

ZEBU.

THE TAPIR*.

THIS is the largeſt animal of the New World, where, as formely remarked, animated Nature ſeems to be contracted, or rather

* The tapir has the fore hoofs divided into four, and the hind hoofs into three parts. The noſe extends far beyond the under jaw, is ſlender, and forms a ſort of proboſcis; it is capable of being contracted or extended at pleaſure, and its ſides are ſulcated. The extremities of both jaws end in a point, and there are ten cutting teeth in each. Between them and the grinders, there is vacant ſpace, and there are ten grinders in each jaw. The ears are erect, the eyes ſmall, and the body ſhaped like a hog. The back is arched, the legs ſhort, and the hoofs ſmall, black, and hollow. The tail is very ſmall. The animal grows to the ſize of a heifer of half a year old. The hair is ſhort; when young, it is ſpotted with white, when old, it is of a duſky colour; *Pennant's Synopſ. of Quad. p.* 82.

Tapir is the Braſilian name of this animal.

Tapira; *Voyage de la Riviere des Amazones, par Condamine, p.* 163.

Tapierette Braſilienſibus; *Marcgr. et Piſo.*

Tapirouſſou; *Voyage au Braſil par Lery, p.* 154.

This animal, which is not only found in Braſil, but in Guiana and Peru, is called *Maipouri* in the Galibi language upon the Guiana coaſt, and *vagra* at Peru; *Condamine, ibid.*

Maipouri or manipoure; *Hiſt. de la France Equin. par Barrere, p.* 160.

Anta; *Marcgrave, Braſil. p.* 229. *Piſo, Braſil. p.* 101. *Nieuhoff's Voy. p.* 23. *Raii Synopſ. Quad. p.* 126. *Klein. Quad. p.* 36.

Danta;

rather not to have had time ſufficient to acquire her full dimenſions. Inſtead of the huge maſſes produced by the ancient lands of Aſia, inſtead of the elephant, rhinoceros, hippopotamus, camelopard, and camel, all the creatures of theſe new lands are modelled upon a ſmall ſcale. The tapirs, the lamas, the pacos, and the cabiais are twenty times ſmaller than the animals of the Old World to which they ſhould reſpectively be compared. Here matter is not only uſed with a niggardly hand, but even forms are imperfect, and ſeem to have failed, or been neglected. Almoſt the whole animals of South America, which alone can be regarded as peculiar to the New World, have neither tuſks, horns, nor tails. Their figure is awkward; their bodies and members are ill proportioned; and ſome of them, as the ant-eaters, the ſloth, &c. are ſo miſerably formed, that they have hardly the powers of moving, or of eating their food. With

Danta; *Condamine*, 163. *Relat. de la Riviere des Amazones, par Chriſt. Acuna, tom.* ii. *p.* 157. *Hiſt. de Paraguai, par Charlevoix, tom.* i. *p.* 32. *Hiſt. Nat. des Indes, par Joſeph Acoſta, p.* 204.

Ante; *Herrera, Deſcript. des Indes Occidentales, p.* 25. *Hiſt. des Indes, par Maffée, p.* 69.

Beori; *Hiſt. Gen. des Voyages, par M. l'Abbé Prevot, tom.* ii. *p.* 636.

Elephant hog; *Wafer's Voy. in Dampier, vol.* iii. *p.* 400.

Mountain cow; *Dampier, vol.* ii. *p.* 102.

Sus acquaticus multiſulcus; *Barrere, Hiſt. Fr. Equin. p.* 160.

Species of hippopotamus, or river horſe; *Bancraft's Guiana, p.* 127.

much

much difficulty they drag out a painful and languiſhing life in the ſolitudes of the deſert, and cannot ſubſiſt in inhabited regions, where man and the ſtronger animals would ſoon deſtroy them.

The tapir is of the ſize of a ſmall cow, or zebu; but has neither horns nor tail. His legs are ſhort, and his body arched. When young, he is ſpotted like the ſtag; and afterwards his hair becomes of an uniform deep brown colour. His head is large, and terminates like that of the rhinoceros, in a long trunk. He has ten cutting teeth and an equal number of grinders in each jaw, a character which ſeparates him entirely from the ox kind, and from all other ruminating animals. As we have only ſome ſkins of this animal, and a drawing ſent us by M. Condamine, we cannot do better than tranſcribe the deſcriptions of him made from the life by Marcgrave * and Barrere, ſubjoining, at the ſame time,

* *Tepiierete* Braſilienſibus, Luſitanis *anta*. Animal quadrupes, magnitudine juvenci ſemeſtris; figura corporis quodammodo ad porcum accedens, capite etiam tali, verum craſſiori, oblongo, ſuperius in acumen deſinente; promuſcide ſuper os prominente, quam validiſſimo nervo contrahere et extendere poteſt; in promuſcide autem ſunt fiſſuræ oblongæ; inferior oris pars eſt brevior ſuperiore. Maxillæ ambæ anterius faſtigiatæ, et in qualibet decem dentes inciſores ſuperne et inferne; hinc per certum ſpatium utraque maxilla caret dentibus, ſequuntur dein molares grandes omnes, in quolibet latere quinque, ita ut haberet viginti molares et viginti inciſores. Oculos habet parvos porcinos, aures obrotundas, majuſculas,

time what has been said concerning him by travellers, and historians. The tapir seems to be a gloomy melancholy animal *. He comes abroad

juſculas, quas verſus anteriora ſurrigit. Crura vix longiora porcinis, et craſſiuſcula; in anterioribus pedibus quatuor ungulas, in poſterioribus tres; media inter eas major eſt in omnibus pedibus; in prioribus pedibus tribus, quarta parvula exterius eſt adjuncta: Sunt autem ungulæ nigricantes, non ſolidæ ſed cavæ, et quæ detrahi poſſunt. Caret cauda, et ejus loco proceſſum habet nudum pilis, conicum, parvum more *Cutian* (Agouti). Mas membrum genitale longe exſerere poteſt, inſtar cercopitheci: Incedit dorſo incurvato ut *Capybara* (Cabiai). Cutem ſolidam habet inſtar alcis, pilos breves. Color pilorum in junioribus eſt umbræ lucidæ, maculis variegatus albicantibus ut capreolus; in adultis fuſcus ſive nigricans ſine maculis. Animal interdiu dormit in opacis ſilvis latitans. Noctu aut mane egreditur pabuli cauſa. Optime poteſt natare. Veſcitur gramine, arundine ſaccharifera, braſſica, &c. Caro ejus comeditur, ſed ingrati ſaporis eſt; *Marcgr. Hiſt. Braſil. p.* 229.——The *tapir* or *maypouri* is an amphibious animal, being oftener in the water than on the land, to which he reſorts from time to time, in order to browſe the more tender herbage. His hair is very ſhort, and interſperſed with black and white bands, which extend from the head to the tail. He makes a kind of hiſſing or whiſtling noiſe; and ſeems to partake a little both of the mule and the hog. We find *manipouris*, as they are called by ſome people, in the river Ouyapok. His fleſh is coarſe and ill taſted; *Barrere, Hiſt. Nat. de la France Equin. p.* 160.

* *Tapiierete*, beſtia iners et ſocors apparet, adeoque lucifuga ut in denſis mediterraneis ſilvis interdiu dormire amet: Ita ut, ſi detur animal aliquod, quod noctu tantum nunquam vero de die venetur, hæc ſane eſt Braſilienſis beſtia, &c.; *Hiſt. Nat. Braſil. p.* 101.——During the day, the anta browſes herbage, and, in the night, he eats a kind of clay found in the marſhes, to which he retires when the ſun ſets.—The antas are hunted during the night, and it is not a difficult buſineſs.

abroad in the night only, and delights in the water, where he dwells oftener than on the land. He lives in the marſhes, and never wanders to any great diſtance from the margins of rivers and lakes. When alarmed, purſued, or wounded, he plunges into the water *, remains long under it, and paſſes over a conſiderable ſpace before he makes his appearance. Theſe habits, which he poſſeſſes in common with the hippopotamus, have induced ſome naturaliſts to ſuppoſe that he belongs to the ſame ſpecies †. But theſe animals are as remote from each other in their natures, as the countries they inhabit. To be aſcertained of this fact, we have only to compare the above deſcriptions with that we have given of the hippopotamus. Though both inhabit the water, the tapir does not feed upon fiſhes; and, though his mouth is armed with

buſineſs. Theſe animals are hunted in their retreats, where they aſſemble ſpontaneouſly in flocks; and, as ſoon as they approach, the hunters run up to them with burning torches, with which they are ſo dazzled and confounded, that they overturn one another, &c.; *Hiſt. du Paraguai, par le P. Charlevoix, tom.* i. *p.* 33.——The antas conceal themſelves during the day in their dens, and come out in the night to feed; *Deſcript. des Indes Occidentales, par Herrera, p.* 251.

* The manipouri is a kind of wild mule. We ſhot at one, but did not kill him. Unleſs the ball or arrow pierce his flanks, he generally eſcapes, particularly when water is near; for he inſtantly plunges into it, and quickly gains the oppoſite bank; *Lettres Edifiantes, recueil* xxiv. *Lettre du P. Fauche.*

† Hippopotamus amphibius pedius quadrilobis; habitat in Nilo.—Hippopotamus terreſtris pedibus poſticis triſulcis. Tapiierete habitat in Braſilia; *Linn. Syſt. Nat. p.* 74.

 twenty

twenty ſharp cutting teeth *, he is not carnivorous. He lives upon plants and roots, and never uſes his weapons againſt other animals. His diſpoſitions are ſo mild and timid, that he declines all hoſtilities, and flies from every danger. Though his legs are ſhort and his body heavy, he runs very ſwiftly, and he ſwims ſtill better than he runs. The texture of his ſkin † is ſo cloſe and firm, that it often reſiſts a muſket ball. His fleſh is coarſe and inſipid; but it is eaten by the Indians ‡. He is found in Braſil, in Paraguay, in Guiana, in the country of the Amazons ‖, and throughout all South America, from the extremity of Chili to New Spain.

* Though the tapirouſſou has ſharp teeth, his only defence is flight, and he is by no means dangerous. The Savages kill him with arrows, or entrap him with ſnares; *Voyage de Lery, p.* 152.

† The tapirouſſou is in great requeſt among the Savages, on account of his ſkin; for, after drying it, they cut it into round ſhields as large as the bottom of a ton.—This ſkin, when dried, is ſo hard that I believe no arrow can pierce it; *Idem.*

‡ The fleſh of the manipouri is coarſe, and has a diſagreeable taſte; *Lettres Edifiantes, recueil* xxiv. *p.* 347.

‖ In the environs of the river of the Amazons, we find an animal called *danta*. It is of the ſize of a mule, which it reſembles in colour and the figure of its body; *Relation de la Riviere des Amazones, par Chriſt. d'Acuna, tom.* ii. *p.* 177.——The elk, which is found in ſome of the woods near Quito, is not rare in the Amazon woods, nor in thoſe of Guiana. I here give the name of *elk* to the animal which the Spaniards and Portugueſe call the *danta*; *Voyage de la Riviere des Amazones, par M. de la Condamine, p.* 163.

Plate CLXXXIV.

A. Bell Sculp.

TAPIR.

OF NATURE.

FIRST VIEW.

NATURE is that ſyſtem of laws eſtabliſhed by the Creator for regulating the exiſtence of bodies, and the ſucceſſion of beings. Nature is not a body; for this body would comprehend every thing. Neither is it a being; for this being would neceſſarily be God. But Nature may be conſidered as an immenſe living power, which animates the univerſe, and which, in ſubordination to the firſt and ſupreme Being, began to act by his command, and its action is ſtill continued by his concurrence or conſent. This power is that portion of the divine power which manifeſts itſelf to men. It is at once the cauſe and the effect, the mode and the ſubſtance, the deſign and the execution. Very different from human art, whoſe productions are only dead works, Nature is herſelf a work perpetually alive, an active and never ceaſing operator, who knows how to employ every material, and, though always labouring on the ſame invariable plan, her power, inſtead of being leſſened, is perfectly inexhauſtible. Time, ſpace, and matter, are her means; the univerſe her object; motion and life her end.

The

The phænomena of the univerfe are the effects of this power. The fprings fhe employs are active forces, which time and fpace can only meafure and limit, but never deftroy; forces which balance, mix, and oppofe, without being able to annihilate each other. Some penetrate and tranfport bodies, others heat and animate them. Attraction and impulfion are the two principal inftruments by which this power acts upon brute matter. Heat and organic particles are the active principles fhe employs in the formation and expanfion of organized beings.

With fuch inftruments, what can limit the operations of Nature? To render her omnipotent, fhe wants only the power of creating and annihilating. But thefe two extremes of power the Almighty has referved to himfelf alone. To create and to annihilate, are his peculiar attributes. To change, to deftroy, to unfold, to renew, to produce, are the only privileges he has conferred on another agent. Nature, the minifter of his irrevocable commands, the depofitary of his immutable decrees, never deviates from the laws he has prefcribed to her. She alters no part of his original plan; and, in all her operations, fhe exhibits the zeal of the eternal Lord of the univerfe. This divine impreffion, this unalterable prototype of all exiftence, is the model upon which fhe operates; a model, all the features of which are expreffed in characters fo ftrongly marked, that nothing can poffibly efface;

face; a model which the number of copies or impressions, though infinite, instead of impairing, only renews.

Every thing, therefore, has been created, and nothing is annihilated. Nature vibrates between these two extremes, without ever reaching either the one or the other. Let us endeavour to lay hold of her in some points of this vast space which she has filled and pervaded from the beginning of ages.

What an infinity of objects; an immense mass of matter, which would have been created in vain, if it had not been divided into portions, separated from each other by spaces a thousand times more immense. Thousands of luminous globes, placed at inconceivable distances, are the bases which support the fabric of the universe; and millions of opaque globes, which circulate round the former, constitute the moving order of its architecture. These great masses are revolved, and carried through space, by two primitive forces, each of which acts continually; and their combined efforts produce the zones of the celestial spheres, and establish, in the midst of vacuity, fixed stations and determined routes or orbits. It is motion that gives rise to the equilibrium of worlds and the repose of the universe.

The first of these forces is equally divided; the second is distributed in unequal proportions. Every atom of matter has the same quantity of attractive

attractive force; and a different quantity of impulsive force is assigned to each individual globe. Some ſtars are fixed and others wandering. Some globes ſeem to be deſtined for attracting, and others for impelling, or being impelled. There are ſpheres which have received a common impulſion in the ſame direction, and others a particular impulſion. Some ſtars are ſolitary, and others accompanied with ſatellites: Some are luminous, and others opaque maſſes. There are planets, the different parts of which ſucceſſively enjoy a borrowed light, and comets, which loſe themſelves in the profundity of ſpace, and return after many ages, to receive the influence of ſolar heat. Some ſuns appear and diſappear, and ſeem to be alternately kindled and extinguiſhed; others exhibit themſelves for once, and then vaniſh for ever. Heaven is a country of great events; but the human eye is hardly able to perceive them. A ſun which periſhes, and deſtroys a world, or a ſyſtem of worlds, has no other effect on our eyes than an ignis fatuus, which gives a tranſitory blaze, and appears no more. Man, limited to the terreſtrial atom on which he vegetates, views this atom as a world, and ſees worlds only as atoms.

The earth which man inhabits, hardly perceptible among the other globes, and totally inviſible to the diſtant ſpheres, is a million of times ſmaller than the ſun by which it is illuminated, and a thouſand times ſmaller than ſome other planets, which are alſo ſubjected to the

power

power of the ſun, and obliged to circulate around him. Saturn, Jupiter, Mars, the Earth, Venus, Mercury, and the Sun, occupy the ſmall part of the heavens which we call *our Univerſe.* All theſe planets with their ſatellites, moving with rapidity in the ſame direction, and nearly in the ſame plane, compoſe a wheel of an immenſe diameter, whoſe axis ſupports the whole weight, and which, by the celerity of its own rotation, muſt inflame and diffuſe heat and light to every part of the circumference. As long as theſe movements continue, (and they will be eternal, unleſs the hand of the prime Mover interpoſe, and exert as much force to deſtroy, as was neceſſary to create them,) the ſun will burn, and fill all the ſpheres of this univerſe with his ſplendour: And as, in a ſyſtem, where all bodies attract each other, nothing can be loſt, or remove without returning, the quantity of mattter remaining always the ſame, this fertile ſource of light and life can never be dried up or exhauſted; for the other ſuns, which likewiſe dart forth their fires continually, reſtore to our ſun as much light as they receive from him.

The comets, which are much more numerous than the planets, and, like the latter, depend on the power of the ſun, preſs alſo on this common focus, and, by augmenting the weight, increaſe the inflammation. They conſtitute a part of our univerſe; for, like the planets, they are ſubjected to the attraction of the ſun. But, in their

projectile

projectile or impelled motions, they have nothing in common, either among themselves, or with the planets. Each circulates in a different plane; and they describe orbits in very different periods of time; for some perform their revolutions in a few years, and others require several centuries. The sun, revolving round his own centre, remains, in other respects, perfectly at rest in the midst of the whole, and serves, at the same time, as a torch, a focus, and an axis to all the parts of this vast machine.

It is by his magnitude alone that the sun remains immoveable, and regulates the motions of the other globes. As the force of attraction is proportioned to the mass of matter, as the sun is incomparably larger than any of the comets, and contains a thousand times more matter than the largest planet, they can neither derange him, nor diminish his influence, which, by extending to immense distances, restrains the whole, and, at fixed periods, recalls those which have stretched farthest into the regions of space. Some of them, when they return, make so near an approach to the sun, that, after cooling for ages, they undergo an inconceivable degree of heat. They are subjected to strange vicissitudes from these alternate extremes of heat and cold, as well as from the inequalities of their motions, which are sometimes prodigiously accelerated, and at other times almost infinitely retarded. When compared with the planets, the comets may be considered

confidered as worlds in diforder; for the orbits of the planets are more regular, and their movements more equal; their temperature is always the fame; they feem to be places of repofe, where every thing being permanent, Nature is enabled to eftablifh an uniform plan of operation, and to mature fucceffively all her various productions. Among the planets, that which we inhabit feems to enjoy peculiar privileges. Lefs cold and lefs diftant than Saturn, Jupiter, and Mars, it is alfo not fo much fcorched as Venus and Mercury, which appear to be too near the body of the fun. Befides, with what magnificence does Nature fhine upon the earth? A pure light, which gradually ftretches from eaft to weft, alternately gilds both hemifpheres of this globe. It is furrounded with a light and tranfparent element. A mild and fertile heat animates and unfolds all the germs of exiftence; and they are nourifhed and fupported by wholefeme waters. Various eminences, diftributed over the furface of the land, ftop and collect the moift vapours which float in the air, and give rife to perpetual fountains. Immenfe cavities, deftined for the reception of thefe waters, feparate iflands and continents. The extent of the fea is as great as that of the land. This is not a cold and barren element. It is a new empire equally rich, and equally peopled with the former. The limits of the waters are marked out by the finger of God. If the fea encroaches on the

the weſtern ſhores, it deſerts thoſe of the eaſt. This vaſt maſs of water, though naturally inactive, is agitated by the influence of the celeſtial bodies, which produces the regular motions of the flux and reflux. It riſes and falls with the courſe of the moon, and, when the action of the ſun and moon concurs, it riſes ſtill higher. Both theſe cauſes uniting during the time of the equinoxes, is the reaſon why the tides are then higheſt. This is the ſtrongeſt mark of our connection with the heavens. Theſe conſtant and general movements give riſe to variable and particular motions; to tranſportations of earth, which, falling to the bottom in the form of ſediment, produce mountains ſimilar to thoſe on the ſurface of the land; to currents, which, following the direction of thoſe chains of mountains, beſtow on them a figure whoſe angles correſpond, and, running in the midſt of the waves, as waters run on the land, are really ſea-rivers.

The air, ſtill lighter and more fluid than water, is likewiſe ſubject to a number of powers. Continual agitations are produced in it by the diſtant influence of the ſun and moon, by the immediate action of the ſea, and by the rarefaction and condenſation of heat and cold. The winds are its currents. They puſh and collect the clouds. They produce meteors, and tranſport to the arid ſurface of iſlands and continents the moiſt vapours of the ocean. They give riſe to ſtorms, and diffuſe and diſtribute the

the fertile dew and rains. They disturb the movements of the sea, agitate the waters, stop or precipitate the currents, elevate the waves, and raise tremendous tempests: The troubled ocean rises toward the heavens, and rolls on with noise and violence against those immoveable barriers, which, with all its efforts, it can neither destroy nor surmount.

The earth, elevated above the level of the ocean, is defended against its irruptions. Its surface, enamelled with flowers, adorned with a verdure which is always renewing, and peopled with numberless species of animals, is a place of perfect repose, a delightful habitation, where man, destined to aid the intentions of Nature, presides over every other being. He alone is capable of knowledge, and dignified with the faculty of admiration: God, therefore, has made him the spectator of the universe, and the witness of his perpetual miracles. The ray of divinity with which he is animated, makes him participate the mysteries of the Deity. It is by this light that he thinks and reflects, that he perceives and understands the wonderful operations of his Creator.

Nature is the external throne of the divine magnificence. Man, who contemplates her, rises gradually to the internal throne of the Almighty. Formed to adore his Creator, he has dominion over every creature. The vassal of heaven, the lord of the earth, he peoples, ennobles, and enriches

enriches this lower world. Among living beings, he eſtabliſhes order, ſubordination, and harmony. To Nature herſelf he even gives imbelliſhment, cultivation, extenſion, and poliſh. He cuts down the thiſtle and the bramble, and he multiplies the vine and the roſe. View thoſe melancholy deſerts where man has never reſided. Over-run with briars, thorns, and trees which are deformed, broken, corrupted, the ſeeds that ought to renew and embelliſh the ſcene are choaked and buried in the midſt of rubbiſh and ſterility. Nature, who, in other ſituations, aſſumes the ſplendour of youth, has here the appearance of old age and decrepitude. The earth, ſurcharged with the ſpoils of its productions, inſtead of a beautiful verdure, preſents nothing but a diſordered maſs of groſs herbage, and of trees loaded with paraſitical plants, as lichens, agarics, and other impure fruits of corruption: All the low grounds are occupied with putrid and ſtagnating waters; the miry lands, which are neither ſolid nor fluid, are impaſſable, and remain equally uſeleſs to the inhabitants of the earth and of the waters; and the marſhes, which are covered with ſtinking aquatic plants, ſerve only to nouriſh venomous inſects, and to harbour impure animals. Between thoſe putrid marſhes which occupy the low grounds, and the decayed foreſts which cover the elevated parts of the country, there is a ſpecies of lands, or ſavanna's, that have no reſemblance to our meadows. There noxious herbs riſe and choak the uſeful kinds.

kinds. Inſtead of that fine enamelled turf, which appears to be the down of the earth, we ſee nothing but rude vegetables, hard prickly plants, ſo interlaced together, that they ſeem to have leſs hold of the earth than of each other, and which, by ſucceſſively drying and ſhooting, form a coarſe mat of ſeveral feet in thickneſs. There is no road, no communication, no veſtige of intelligence, in theſe ſavage and deſolate regions. Man, reduced to the neceſſity of following the tract of wild beaſts, when he wants to kill them, obliged to watch perpetually leſt he ſhould fall a victim to their rage, terrified by their occaſional roarings, and even ſtruck with the awful ſilence of thoſe profound ſolitudes, he ſhrinks back, and ſays: 'Uncultivated Nature is hideous and languiſhing. It is I alone who can render her agreeable and vivacious. Let us drain theſe marſhes; let us animate theſe waters by converting them into brooks and canals; let us employ this active and devouring element, whoſe nature was formerly concealed from us; let us ſet fire to this cumberſome load of vegetables, and to thoſe ſuperannuated foreſts, which are already half conſumed; let us finiſh the work by deſtroying with iron what could not be diſſipated by fire. Inſtead of ruſhes, and water-lilies, from which the toad is ſaid to extract his poiſon, we ſhall ſoon ſee the ranunculus, the truffle, and other mild and ſalutary herbs; flocks of ſprightly cattle will browſe upon this land,

' which was formerly impassable; here they will ' find abundance of food, a never failing pasture, ' and they will continue to multiply and to re- ' ward us for our labours, and the protection ' we have afforded them. To complete the ' work, let the ox be subjected to the yoke; ' let his strength and the weight of his body be ' employed in ploughing the ground, which ac- ' quires fresh vigour by culture. Thus will ' Nature acquire redoubled strength and splen- ' dour from the skill and industry of man.'

How beautiful is cultivated Nature! How pompous and brilliant, when decorated by the hand of man! He himself is her chief ornament, her noblest production. By multiplying his own species, he increases the most precious of her works. She even seems to multiply in the same proportion with him; for, by his art, he brings to light every thing which she concealed in her bosom. What a source of unknown treasures! Flowers, fruits, and grains matured to perfection, and multiplied to infinity; the useful species of animals transported, propagated, and increased without number; the noxious kinds diminished, and banished from the abodes of men; gold, and iron a more useful metal, extracted from the bowels of the earth; torrents restrained, and rivers directed and confined within their banks; even the ocean itself subdued, investigated, and traversed from the one hemisphere to the other; the earth every where

where accessible, and rendered active and fertile; the valleys and plains converted into smiling meadows, rich pastures, and cultivated fields; the hills loaded with vines and fruits, and their summits crowned with useful trees; the deserts turned into populous cities, whose inhabitants spread from its centre to its utmost extremities; open and frequented roads and communications every where established, as so many evidences of the union and strength of society. A thousand other monuments of power and of glory sufficiently demonstrate that man is the lord of the earth; that he has entirely changed and renewed its surface; and, that from the remotest periods of time, he alone has divided the empire of the world between him and Nature.

He reigns however by the right of conquest only. He enjoys rather than possesses; and preserves his privileges by perpetual vigilance and activity. If these are interrupted, every thing languishes, alters, and returns to the absolute dominion of Nature. She resumes her rights, effaces the operations of man, covers with moss and dust his most pompous monuments, which, in the progess of time, she totally destroys, and leaves him only the regret of having lost by his own fault, what his ancestors had acquired by their industry. Those periods, when man loses his empire, those barbarous ages in which every thing of value perishes, commence with war, and are completed by famine and depopulation. Man, whose strength consists solely in the union

union of numbers, and whofe happinefs is derived from peace, is yet mad enough to take up arms, and to fight, which are never failing fources of mifery and ruin. Incited by infatiable avarice, and by blind ambition, which is ftill more infatiable, he renounces the feelings of humanity, turns all his ftrength againft himfelf, and his whole defires centre in the deftruction of his own fpecies, which he foon accomplifhes. After thefe days of blood and carnage, when the intoxicating fumes of glory are difpelled, he furveys with a melancholy eye, the earth defolated, the arts buried, nations difperfed, an enfeebled people, the ruin of his own happinefs, and the annihilation of his real power.

Omnipotent God! *whofe prefence fupports Nature, and maintains harmony among the laws of the univerfe; who, from thy immoveable throne in the Empirean, feeft all the celeftial fpheres rolling under thy feet, without deviation or diforder; who, from the bofom of repofe, reneweft, at every inftant, their vaft movements, and who alone governeft, in profound peace, an infinite number of heavens and of earths; reftore, reftore tranquillity to a troubled world*! Let the earth be filent! Let the prefumptuous tumults of war and difcord be difpelled by the found of thy voice! Merciful* God! *Author of all beings, thy paternal regards embrace every created object: But man is thy chief favourite.*

* This effufion was probably written before the termination of the laft war between Britain and France.

favourite. Thou hast illuminated his mind with a ray of thy immortal light; penetrate also his heart with a shaft of thy love: This divine sentiment, when universally diffused, will unite the most hostile spirits; man will no longer dread the aspect of man, and his hand will cease to be armed with murdering steel; the devouring flames of war will no more dry up the sources of generations; the human species, now weakened, mutilated, and prematurely mowed down, will germinate afresh, and multiply without number: Nature, groaning under the pressure of calamity, sterile, and abandoned, will soon resume, with accumulated vigour, her former fecundity; and we, beneficent GOD, *we shall aid, cultivate, and incessantly contemplate her operations, that we may be enabled to offer thee, every moment, a fresh tribute of gratitude and admiration.*

THE ZEBRA*.

WHETHER we consider symmetry of shape, or beauty of colours, the zebra is perhaps the most elegant of all quadrupeds. In this animal, the figure and gracefulness of the horse are united with the nimbleness of the stag. His robe is adorned with black and white belts or ribands, alternately disposed, with such regularity and exact proportion, that Nature seems here to have employed the rule and the compass. These alternate bands of black and white are the more singular, because they are straight, parallel, and as nicely separated as those of a striped stuff. Besides, they extend not only over the body, but the head, thighs, legs, and even the

* The zebra has a short erect mane; the tail is furnished with long hairs at the end; and the whole body is beautifully striped, from the back to the belly, with lines of brown, on a very pale buff ground. It is the most elegant of all quadrupeds; *Pennant's Synops. of Quad. p.* 2.

It is called *Zebra, Zevera,* and *Sebra,* in Congo; and, according to Pyrard, *Esvre* in Angola.

Pulcher onager; *Martial. Epig. lib.* xii. 101. *Oppian. Cyneg.* iii. 183.

Zebra; *Nieremberg. p.* 168. *Raii Synops. Quad. p.* 64. *Klein. Quad. p.* 5. *Aldrovand. de Quad. Solid. p.* 416.

Le zebre, ou l'âne rayé; *Brisson. Quad. p.* 70.

Equus zebra, fasciis fuscis versicolor; *Linn. Syst. Nat. p.* 101.

Wild ass; *Kolben's Cape of Good Hope, vol.* ii. *p.* 112.

ears

ears and tail; ſo that, at a diſtance, the whole body of the animal has the appearance of being artificially adorned, in the moſt elegant manner, with ribbands. In the female, theſe bands are alternately black and white, and black and yellow in the male. The ſhades are always lively and brilliant; and the hair is ſhort, cloſe, and fine, the luſtre of which augments the beauty of the colours. The zebra, in general, is ſmaller than the horſe, and larger than the aſs. Though he has often been compared to theſe two animals, under the names of the *wild horſe* *, and *ſtriped aſs* †, he is not a copy of either, but ſhould rather be regarded as their model, if in Nature every ſpecies were not equally original, and had not an equal right to creation.

The zebra, therefore, is neither a horſe nor an aſs; for, though it has often been attempted, we never learned that they intermixed and produced together. She-aſſes in ſeaſon were preſented to the zebra which was in the menagery of Verſailles in the year 1761. He diſdained them, or rather diſcovered no emotion. He however ſported with them, and even mounted them, but without diſcovering any deſire, or external ſign. This coldneſs could be attributed to no other cauſe than an unſuitableneſs in the

* Equus ferus genere ſuo; zebra; *Klein. de Quad. p.* 5.

† Infortunatum animal, quod tam pulchris coloribus præditum, *aſini* nomen in Europa ferre cogatur. Vide Ludolphi Comment. p. 150. Ibique zebræ figuram.

natures

natures of the two animals; for the zebra was four years of age, and, in every other exercife, was fprightly and vigorous.

The zebra is not the animal mentioned by the ancients under the name of *onager*. In the Levant, in the eaftern parts of Afia, and in the north of Africa, there is a fine race of affes, which, like the moft beautiful horfes, originated in Arabia*. This race differs from the common kind by the largenefs of their body, the nimblenefs of their limbs, and the luftre of their hair. They are of one uniform colour, which is a beautiful moufe gray, with a black crofs on the back and fhoulders. Sometimes their colour is a brighter gray with a whitifh crofs †. Thefe African and Afiatic affes ‡, though more beautiful

* In Perfia there are two kinds of affes; thofe belonging to the country, which, like ours, are flow and ftupid, and ufed for carrying burdens only; and the Arabian affes, which are extremely handfome, and the moft excellent of the fpecies. They have fmooth hair, a high head, and nimble limbs. They are ufed folely for riding. . . . Like horfes, they are trained to amble; and their motion is extremely foft, and fo fleet, that it requires a gallop to keep up with them; *Voyage de Chardin, tom.* ii. *p.* 27. *Voyage de Tavernier, tom.* ii. *p.* 20.

† At Baffora, I faw a wild afs. Its figure differed not from that of the domeftic kind; but its colour was brighter, and, from the head to the tail, there was a band of whitifh hair. . . . In running, and in every other motion, it feemed to be much more nimble than the common kind; *Voyage de Pietra della Valle, tom.* viii. *p.* 49.

‡ The Moors, who come to Cape-Verd to traffick, carry their baggage and wares upon affes. Thefe animals were fo beautiful and fo fmooth fkinned, that it was with difficulty I could

tiful than those of Europe, proceed equally from the *onagri* or *wild asses*, which are still numerous in South and East Tartary *, in Persia, Syria, the islands of the Archipelago, and in Mauritania †. The onagers differ from the domestic asses by those qualities only which result from freedom and independence: They are stronger and more nimble, and they have more courage and vivacity. The figure of their bodies

could recognise them to be asses. Those of Europe, I imagine, would be in the same condition, if their labour, and the manner in which they are loaded, did not greatly disfigure them. Their hair was of a beautiful, shining, mouse gray colour, upon which the black band along the back and across the shoulders had a fine effect. These asses are a little larger than ours. Their head, however, is easily distinguishable from that of the horse, especially the Barbary horse, which is a native of this country, and of a still higher stature; *Voyage au Senegal, par M. Adanson, p.* 118.—There are great numbers of wild asses in the deserts of Numidia and Lybia, and the adjacent country. They are so fleet, that the Barbary horses alone are able to overtake them in the course. As soon as they see a man, they stop, fling up their heels, and cry; and, when he is near, they run off. They are taken by various kinds of snares. They go in troops to pasture and to drink. Their flesh is very good; but it must be allowed to cool two days after being roasted, on account of its strong smell. We have seen a number of these animals in Sardinia; but they were smaller; *L'Afrique de Marmol, tom.* i. *p.* 53.

* The animal which the Mogul Tartars call *Czigithai*, and which Messerschmid has denominated *mulus fœcundus Dauricus*, is the same with the *onager* or *wild ass*.

† We find many wild asses in the islands of Peine, and of Levata or Lebinthos. . . . They are also found in the island of Cythera, now called *Cerigo*; *Descript. des Isles de l'Archipel, par Dapper, p.* 185. 378.

is

is the ſame, though the hair is longer. This difference depends likewiſe on their condition; for our aſſes would have hair equally long, if they were not ſhorn at the age of four or five months. The hair of a colt is at firſt nearly as long as that of a young bear. The ſkin of the wild aſs is equally hard as that of the domeſtic kind, and we are aſſured that it is full of ſmall tubercles. The chagrin brought from the Levant, which we employ for various purpoſes, is ſaid to be made of the wild aſs's ſkin.

But neither the onager, nor the fine aſſes of Arabia, can be regarded as the origin of the zebra ſpecies, though they reſemble it in figure and ſwiftneſs. None of them exhibit that regular variety of colours, by which the zebra is ſo eminently diſtinguiſhed. This beautiful ſpecies is ſingular, and very remote from all other kinds. It likewiſe belongs to a different climate from that of the onager, being only found in the eaſtern and ſouthern regions of Africa, from Æthiopia to the Cape of Good Hope *, and from thence

* At the Cape of Good Hope there are numbers of wild aſſes, which are the moſt beautiful in the world. They are finely ſtriped with black and white bands, and are very difficult to tame; *Relation du Chevalier de Chaumont, p.* 12.—The wild aſs of the Cape is one of the moſt beautiful animals I have ever ſeen. He is of the ſize of an ordinary ſaddle horſe. His limbs are ſlender, and well proportioned, and his hair is ſoft and cloſe. From the mane to the tail, a black band runs along the back, from which numbers of other bands of *different colours* proceed, and form circles by meeting under the belly.

thence as far as Congo *. He exiſts not in Europe, Aſia, America, nor in any of the northern parts of Africa. Thoſe mentioned by ſome voyagers

belly. Some of theſe circles are white, others yellow, and others cheſnut; and their various ſhades run into each other in ſuch a manner as charms the eye of the ſpectator. His head and ears are alſo adorned with ſmall bands of the ſame colours. Thoſe on the mane and tail are moſtly white, cheſnut, or brown, and few of them yellow. He is ſo fleet that no horſe in the world can be compared to him. Hence it is extemely difficult to catch him, and, when caught, he ſells very dear. . . . I have often ſeen large troops of theſe animals. Father Tellez, Thevenot, and other authors, aſſert, that they have ſeen them tamed; but I never heard of their being tamed at the Cape. Several Europeans have ineffectually exerted all their ſkill and induſtry to accompliſh this end; *Deſcript. du Cap de Bonne-Eſperance, par Kolbe, tom.* iii. *p.* 25.

* At Pamba, in the kingdom of Congo, we find an animal called *zebre* by the natives, which exactly reſembles a mule, except that it is prolific. Beſides, its hair is wonderfully diſpoſed; for, from the ſpine of the back to the belly, there are bands, of white, black, and yellow, about three inches broad, and arranged with the niceſt proportion. Theſe animals multiply greatly in this country; for they produce every year. They are extremely fleet and wild. If tamed, they might ſupply the place of the horſe; *Drake's Voyage, p.* 106.—On the road to Loanda in the kingdom of Congo, there is an animal of the ſize and ſtrength of a mule; but its hair is variegated with white, black, and yellow bands, which encircle the body from the ſpine of the back to the belly, and are ſo beautiful, and ſo regularly diſpoſed, that they have the appearance of being drawn by a pencil. It is named *zebra*; *Relat. d'un Voyage de Congo, par les P. P. Michel-Ange de Galline et Denys de Charly, Capucins, p.* 76.—In Congo, there is an animal called *ſebra*, which every way reſembles a mule, except in its power of producing. Its hair is very ſingular: From the ridge of the back to the belly, there are three bands of

agers* to have been found in Brasil, had been transported thither from Africa. Others, which have been seen in Persia †, and in Turkey ‡, had been

of different colours, &c. *Voyage de la Compagnie des Indes de Hollande, tom.* iv. *p.* 320.

* When I arrived in Brasil, I saw two very rare animals, which were of the figure and size of a small mule; yet they are not mules; for they are fertile. The skin is extremely beautiful, very smooth, short, and shining like velvet. The hair is disposed into fine white and blacks bands, which run in the most exact proportion over the whole body, ears, tail, and other extremities. Moreover, these animals are very fierce, and never can be fully tamed. They are called, in the country from which they are brought, *esvres*. They are natives of Angola in Africa, from whence they were transported to Brasil, in order to be afterwards presented to the King of Spain. Though they had been taken when very young, and were a little tamed, no body durst approach them, except their keeper. Some time before I arrived, one of them had broke loose, and killed a groom. . . . Though tied up very close, the keeper showed me several bites he had received from them. The shin of the animal is extremely beautiful; *Voyage de Pyrard, tom.* ii. *p.* 376.

† The ambassadors from Æthiopia to the Mogul, must give a present of a kind of mule, whose skin I was shown as a great rariety. No tiger is so finely marked, no silken stuff is striped with such variety, order, and proportion, as the skin of this animal; *Hist. de la Revolution du Mogol, par Fr. Bernier, tom.* i. *p.* 181.

‡ An ambassador from Æthiopia arrived at Cairo with presents for the Grand Seignior. Among others, there was an ass that had a most beautiful skin, provided it was natural, of which I am uncertain, as I did not examine it. It had a black line along the back, and all the rest of the body was variegated with alternate bands of white and tawny. The head was very long, and striped in the same manner with the body. The ears were black, yellow, and white. The legs were striped like the body, not lengthwise, but round in the manner

been brought to these countries from Æthiopia. In fine, almost all those we have seen in Europe came from the Cape of Good Hope. This point of Africa is their native climate, where they are very numerous, and where the Dutch have exerted every effort to tame and render them domestic; but they have not hitherto been able fully to accomplish this purpose. The zebra, which was the subject of our description, was extremely wild when he arrived at the royal menagery, and is not yet entirely tamed. They have, however, brought him the length of being mounted; but it requires great precaution. Two men hold the bridle, while a third sits on the animal's back. His mouth is extremely hard: His ears are so sensible, that he flings whenever they are touched, and, like a vicious horse, he is restless, and as stubborn as a mule. But the wild horse and the onager are perhaps equally untractable; and it is extremely probable, that, if the zebra were early accustomed to obedience, and to a domestic state, he would become equally gentle with the ass and horse, and might supply the place of both.

manner of garters. The whole of these stripes or bands were disposed with such symmetry, that no tiger or leopard's skin could equal the beauty of this animal's skin. Two similar asses, belonging to the same ambassador, died on the road, and he was carrying their skins, together with the animal that survived, as a present to the Grand Seignior; *Relat. d'un Voyage, par Thevenot, tom.* i. *p.* 473.

SUPPLEMENT.

THE aſs, either in a domeſtic or wild ſtate, is found in almoſt every warm and temperate climate of the Old Continent, and exiſted not in the New when it was firſt diſcovered. But the ſpecies, after being tranſported thither from Europe, has now ſubſiſted and multiplied greatly in America, during more than two centuries; ſo that, at preſent, it is almoſt equally diffuſed over the four quarters of the globe. The zebra, on the contrary, which was brought to us from the Cape of Good Hope, ſeems to be a ſpecies limited to the ſouthern regions of Africa; though Lopez aſſerts, that the zebras are more frequent in Barbary than in Congo, and though Dapper relates that troops of them are found in the foreſts of Angola.

This beautiful animal, which, both from the variety of its colours and the elegance of its figure, is ſo ſuperior to the aſs, ſeems, notwithſtanding, to be nearly of the ſame ſpecies; ſince moſt travellers give it the name of the *ſtriped aſs*, becauſe, at firſt ſight, they are ſtruck with its ſuperior reſemblance, both in ſize and figure, to the aſs than to the horſe; for it was not with the ſmall common aſſes that they compared the zebra, but with the largeſt and moſt beautiful of the

the ſpecies. I am ſtill inclined to think, however, that the zebra approaches nearer to the horſe than the aſs; for his figure is ſo elegant, that though, in general, he is ſmaller than the horſe, the ſimilarities between them, in other reſpects, are very apparent. To confirm this opinion, it has been remarked, with ſome degree of ſurpriſe, that, in the neighbourhood of the Cape of Good Hope, which appears to be the native country of the zebra, there are horſes ſpotted on the back and belly with yellow, black, red, and azure *. This particular argument is ſupported by the general fact, that, in all climates, the colour of the horſe varies more than that of the aſs. We pretend not to decide this queſtion; but we hope it will ſoon be determined. As the Dutch have lately tranſported great numbers of theſe elegant animals, and have even yoked them in the Stadtholder's chariot, it is probable, that, in a ſhort time, we ſhall receive information of every thing relating to their nature. That induſtrious nation cannot fail to make theſe animals unite among themſelves, and perhaps with horſes and aſſes, in order to produce direct or baſtard races. In Holland there are ſeveral expert naturaliſts who will perhaps ſucceed better than we did in the multiplication of the zebra, upon which only a ſingle experiment was made at the royal menagery in the year 1761. The male, which was four years of age, diſdained

* Captain Robert's Voyage, tom. i. p. 94.

the ſhe-aſſes, though in ſeaſon, and no more were preſented to him. Perhaps he was alſo too young. Beſides, he was not rendered familiar with the females, a neceſſary preliminary for ſucceeding in the union of different ſpecies, which Nature ſeems to require even in the intercourſe of individuals of the ſame ſpecies.

The fertile mule of Tartary, called *czigithai*, may perhaps be an animal of the ſame ſpecies with the zebra; for there ſeems to be no difference between them, but in colour. Now, it is well known that the differences in the colour of the hair or feathers are extremely ſlight, and depend on the influence of the climate. The czigithai is found in the ſouthern parts of Siberia, in Thibet, in Dauria, and in Tartary. Gerbillon remarks, that theſe animals are common in the country of the Mongoux and Kakas; that they differ from domeſtic mules; and that they cannot be trained to bear burdens *. Muller and Gmelin aſſure us, that they are numerous in the country of the Tonguſians, where they are hunted like other game; that, in Siberia, toward Borsja, they are very plenty in dry years; and he adds, that they reſemble, in figure, ſize, and colour, a bright bay horſe, except that they have very long ears †, and a tail like that of a cow. If theſe travellers who ex-

* Hiſt, Gen. des Voyages, tom. vi. p. 601.

† Voyage de M. Muller et Gmelin, tom. ii. p. 105. 107.

amined

amined the czigithai, had, at the ſame time, compared it with the zebra, they would perhaps have diſcovered a greater number of relations than we are apt to imagine. In the Peterſburgh cabinet there are ſtuffed ſkins both of the zebra and czigithai. Though theſe ſkins differ in colour, they may belong to the ſame, or a very neighbouring ſpecies. Time alone can remove or confirm theſe conjectures. But, as all the other animals of Africa are likewiſe found in Aſia, if the zebra and czigithai are not of the ſame ſpecies, the zebra alone would be an exception to this general rule.

Beſides, if the czigithai is not the ſame with the zebra, it may be the Aſiatic animal called *onager* or *wild aſs*. The onager ſhould not be confounded with the zebra; but I am uncertain whether the ſame remark is applicable to the onager and czigithai; for, from comparing the relations of travellers, it appears, that there are different kinds of wild aſſes, of which the onager is the moſt remarkable. Perhaps the horſe, the aſs, the onager, and the czigithai, conſtitute four diſtinct ſpecies: And, on the ſuppoſition that they are only three, it is ſtill uncertain whether the czigithai be an onager or a zebra. The ſwiftneſs of the onager is mentioned by travellers, who remark, that he runs with ſuch rapidity as to eſcape the hunters, though mounted on horſes; and they ſay the ſame thing of the czigithai. However this

matter ſtands, the horſe, the aſs, the zebra, and the czigithai, belong to the ſame genus, and conſtitute three or four branches of the ſame family; the two firſt of which have long been reduced to a domeſtic ſtate. We may therefore hope, that the two laſt may likewiſe be tamed, and prove a uſeful acquiſition to mankind.

Plate CLXXXV.

A Bell Sculp.t

ZEBRA.

Plate CLXXXVI.

A. Bell Sculp.t

ZEBRA.

The HIPPOPOTAMUS*.

THOUGH the hippopotamus has been celebrated from the remoteſt antiquity; though the ſacred writings mention him under the name of *Behemoth*; and though his figure is engraved

* The hippopotame has four cutting teeth in each jaw. Thoſe in the middle are ſtraight and pointed forward, the two middlemoſt the largeſt. It has four tuſks, thoſe in the upper jaw are ſhort, and the lower very long, and truncated obliquely. The head is of an enormous ſize, and the mouth is vaſtly wide. The ears are ſmall and pointed, and lined within very thickly with ſhort fine hairs. The eyes and noſtrils are ſmall in proportion to the bulk of the animal. On the lips are ſome ſtrong hairs ſcattered in patches here and there. The hair on the body is very thin, of a whitiſh colour, and ſcarce diſcernable at firſt ſight. There is no mane on the neck, as ſome writers feign, only the hairs on that part are rather thicker. The ſkin is very thick and ſtrong, and of a duſky colour. The tail is about a foot long, taper, compreſſed, and naked. The hoofs are divided into four parts; but, notwithſtanding it is an amphibious animal, they are not connected by membranes. The legs are ſhort and thick. In bulk, it is ſecond only to the elephant. The length of a male has been found to be ſeventeen feet, the circumference of the body fifteen, the height near ſeven, the legs near three, the head above three and a half, and the girth near nine; *Pennant's Synopſ. of Quad. p.* 78.

In Hebrew, *Behemoth*; *Shaw's Travels, Suppl. p.* 87. *Bochart*; in Greek, Ἱπποποταμος; *Ariſt. Hiſt. Anim. lib.* ii. *c.* 7.; in Latin, *Hippopotamus*; in Italian, *Hippopotamo*; in the Egyptian language, according to Zerenghi, *Forasl'bar*, which ſignifies *ſea-horſe.*

 Hippopotamus;

ed on the Egyptian obelifks, and on the Roman medals; yet he was very imperfectly known to the ancients. Ariftotle * fpeaks of this animal in

Hippopotamus; *Belon. Obf. de la Nature de Poiffons, p.* 17. *Gefner. Quad. p.* 493. *Razivil Iter Hierofol. p.* 142. *Raii Synopf. Quad. p.* 123. *Fab. Columna. Aquat. p.* 28. *Aldrov. de Quad. Digit. vivip. p.* 181.

River-horfe; *Grew's Mufeum, p.* 14. *tab.* 1. *Ludolph. Æthiop. p.* 60.

Cheropotamus et hippopotamus; *Profp. Alp. Egyp. Hift. Nat. lib.* iv. *p.* 246. *tab.* 23.

Sea-ox; *Lobo Abyffin. p.* 105. *Kolben's Cape,* vol. ii. *p.* 129.

Sea-horfe; *Leo Afric. p.* 344. *Dampier's Voy. vol.* ii. *p.* 104. *Adanfon's Voy. p.* 133. *Moore's Voy. to Gambia, p.* 105. 188. 216.

River-paard; *Houttuyn. Nat. Hift. vol.* iii. *p.* 405. *tab.* 28.

Water-elephant; *Barbot, Voy. to Guiney, p.* 113. 173.

Hippopotamus amphibius, pedibus quadrilobis; *Linn. Syft. Nat. p.* 101. *Haffelquift. Iter, p.* 201. *Klein. Quad. p.* 34. *Briffon. Quad. p.* 83.

Hippopotamo; *La vera Defcriptione dell Hippopotamo, auctore Federico Zerenghi da Narni, medico Chirurgico in Napoli,* 1603, *p.* 67. *Note,* This defcription of the hippopotamus makes a part of an abridgement of furgery, compofed by the fame author, on the 65th page of which is the particular title above quoted. This fmall work, which is both original and excellent, is at the fame time fo rare, as not to be mentioned by any naturalifts. The figure was drawn from a female hippopotamus.

* Equo fluviatili, quem gignit Egyptus, juba equi, ungula qualis bubus, roftrum refimum. Talus etiam ineft bifulcorum modo; dentes exerti fed leviter; cauda apri, vox equi, magnitudo afini, tergoris craffitudo tanta ut ex eo venabula faciant, interiora omnia equi et afini fimilia; *Arift. Hift Anim. lib.* ii. *cap.* 7.——— Natura etiam equi fluviatilis ita conftat, ut vivere nifi in humore non poffit; *Idem. lib.* viii. *cap.* 24. *Note,* The hippopotamus has no mane like the horfe; and his hoofs are not divided into two, but into four. His tufks appear not on

in the moſt ſuperficial manner; and in the little he ſays, there are more errors than truth. Pliny * copies Ariſtotle, and, inſtead of correcting, adds to the number of his blunders. It was not till about the middle of the ſixteenth century that any preciſe information was obtained concerning this animal. Belon, being then at Conſtantinople, ſaw a living hippopotamus, of which, however, he gives but an imperfect repreſentation; for the two figures which he has added to his deſcription were not drawn from the animal he ſaw, but were copied from the reverſe of Adrian's medal, and from the Egyptian Coloſſus at Rome. Hence the æra of any exact knowledge concerning this animal muſt be brought forward to the year 1603, when Federico Zerenghi, a ſurgeon of Narni in Italy, printed at Naples the hiſtory of two hippopotami which he had taken alive in a great ditch dug on purpoſe in the neighbourhood of the Nile, near Damietta. This little book was written in Italian; and, though it be the only

on the outſide of the mouth. His tail is very different from that of the wild boar; and he is at leaſt ſix times larger than the aſs. Like other quadrupeds, he can live on land; for the one deſcribed by Belon had lived two or three days without entering the water. Hence Ariſtotle muſt have had very bad information concerning this animal.

* Pliny ſays, that the hippopotamus inhabits the ſea as well as the rivers, and that he is covered with hair like the ſea-calf. *Note*, This laſt fact is advanced without any foundation; for it is certain that he has no hair on his ſkin, and that he was never ſeen nearer the ſea than the mouths of rivers.

 thing

thing original we have upon this ſubject, it ſeems to have been totally neglected both by contemporary and ſucceeding naturaliſts. The deſcription it contains of the hippopotamus is, at the ſame time, ſo good, and appears ſo worthy of credit, that I ſhall here give an extract and tranſlation of it.

'With a view,' ſays Zerenghi, 'of obtaining 'an hippopotamus, I ſtationed men upon the 'Nile, who, having ſeen two of theſe animals go 'out of the river, made a large ditch in the way 'through which they paſſed, and covered it with 'thin planks, earth, and herbage. In the even'ing, when returning to the river, they both fell 'into the ditch. I was immediately informed 'of the event, and haſtened to the place along 'with my Janiſſary. We killed both the ani'mals by pouring three ſhot into each of their 'heads from a large arquebuſe. They almoſt 'inſtantly expired, after uttering a cry which 'had more reſemblance to the bellowing of 'a buffalo, than to the neighing of a horſe. 'This exploit was performed on the 20th day 'of July 1600. The following day, they were 'drawn out of the ditch, and carefully ſkinned. 'The one was a male and the other a female. 'I cauſed their ſkins to be ſalted, and ſtuffed 'with the leaves of the ſugar-cane, in order to 'tranſport them to Cairo, where they were 'ſalted a ſecond time with more attention and 'convenience. Each ſkin required four hun'dred pounds of ſalt. On my return from

'Egypt,

'Egypt, in 1601, I brought theſe ſkins to Venice, 'and from thence to Rome. I ſhowed them 'to ſeveral intelligent phyſicians. Doctor Je-'rome Aquapendente and the celebrated Al-'drovandus were the only perſons who recog-'niſed them to be the ſpoils of the hippopota-'mus; and, as Aldrovandus's work was then 'printing, I allowed him to draw a figure from 'the ſkin of the female, which he inſerted in 'his book.

'The ſkin of the hippopotamus is very thick, 'and very hard; it is even impenetrable, un-'leſs after being long ſteeped in water. The 'mouth is not, as the ancients alledge, of a 'middle ſize, but enormouſly large. Neither 'are his feet divided into two toes, but into 'four. His ſize is not that of an aſs; for 'he is much larger than the largeſt horſe or 'buffalo. His tail reſembles not that of a hog, 'but rather that of the tortoiſe, only it is in-'comparably larger. His muzzle is not turned 'up, but reſembles that of the buffalo, and is 'much larger. He has no mane, but only a 'few ſhort ſcattered hairs. He neighs not like 'a horſe; but his voice is a medium between 'the bellowing of a buffalo and the neighing 'of a horſe. He has no tuſks which protrude 'out of the mouth; for, when the mouth is 'ſhut, the teeth, though extremely large, are all 'concealed within the lips. . . . . The inha-'bitants of this part of Egypt call him *foras 'l'bar*, which ſignifies the *ſea-horſe*. . . . Be-

'lon's

'lon's defcription is very erroneous: He gives 'to this animal the teeth of the horfe, which 'would lead us to think, contrary to his own 'affertions, that he had never feen it; for the 'teeth of the hippopotamus are very large and 'very fingular. . . . To remove every uncer-'tainty,' continues Zerenghi, 'I here give the 'figure of the female hippopotamus with all the 'dimenfions and proportions of the body and 'members, drawn exactly according to nature.

'The length of this hippopotamus, from the 'extremity of the upper lip to the origin of the 'tail, is nearly eleven feet two inches *.

'The circumference of the body is about ten 'feet.

'The height, from the fole of the foot to the 'top of the back, is four feet five inches.

'The circumference of the legs, near the 'fhoulders, is two feet nine inches, and, when 'taken lower, one foot nine inches and a half.

'The height of the legs, from the fole of the 'foot to the breaft, is one foot ten inches and a 'half.

'The length of the feet from the extremity 'of the nails, is about four inches and a half.' *Nota*, I have here taken a mean between Zerenghi's two meafures for the length of the feet.

'The nails, or divifions of the hoof, are as 'long as they are broad, being two inches and 'two lines.'

* This and the following meafures are all Paris feet and inches.

'Each

'Each toe has a nail, and each foot four toes. 'The ſkin, on the back, is near an inch, and 'that on the belly about ſeven lines thick.

'The ſkin, when dried, is ſo hard that a 'muſket ball cannot pierce it. The country 'people make large ſhields of it, and likewiſe 'uſe it for thongs or whips. On the ſurface 'of the ſkin there are a few ſcattered whitiſh 'hairs, which are not perceptible at firſt ſight. 'On the neck the hairs are longer, and all of 'them placed one by one, at greater or ſmaller 'diſtances from each other. But, on the lips, 'they form a kind of whiſkers; for, in ſeveral 'places, ten or twelve of them iſſue from the 'ſame point. Theſe hairs are of the ſame co-'lour as the others, only they are harder, thicker, 'and ſomewhat longer, though none of them 'exceeds half an inch in length.

'The length of the tail is eleven inches four 'lines: Its circumference, at the origin, is a 'little more than a foot, and, at the extremity, 'two inches ten lines.

'The tail is not round; but, from the middle 'to the point, it is flattened, like that of an eel. 'Upon the tail and the thighs there are ſome 'round ſcales, of a whitiſh colour, and as large 'as lentiles. Theſe ſmall ſcales likewiſe appear 'on the breaſt, the neck, and ſome parts of the 'head.

'From the extremity of the lips to the be-'ginning of the neck, the head is four feet four 'inches.

'The

'The circumference of the head is about five
'feet eight inches.'

'The ears are two inches nine lines long, 'two inches three lines broad, a little pointed, 'and garniſhed in the inſide with fine, ſhort, thick 'hairs, of the ſame colour as the others.

'The eyes, from one corner to the other, are 'two inches three lines; and the eye-lids are 'diſtant from each other one inch one line.

'The noſtrils are two inches four lines long, 'and one inch three lines broad.

'The mouth opens to the width of one foot 'five inches four lines. It is of a ſquare form, 'and furniſhed with forty-four teeth of differ-'ent figures*. . . . . All theſe teeth are ſo 'hard, that they ſtrike fire with ſteel. It is 'chiefly the enamel of the canine teeth which 'poſſeſſes this degree of hardneſs, the internal 'ſubſtance of the whole being ſofter. . . . When 'the hippopotamus keeps his mouth ſhut, no 'teeth appear without, but are all covered with 'the lips, which are extremely large.

'With regard to the figure of the hippopo-'tamus, it appears to be a medium between 'thoſe of the buffalo and hog, becauſe it par-'ticipates of both, except the cutting teeth,

* In three heads of the hippopotamus, preſerved in the royal cabinet, there are only thirty-ſix teeth. As theſe heads are ſmaller than that deſcribed by Zerenghi, it may be preſumed that, in young hippopotami, all the grinders are not developed, and that adults have eight more.

'which

'which have no resemblance to those of either 'of these animals. The grinding teeth have 'some similarity to those of the buffalo or horse, 'though they are much longer. The colour 'of the body is dusky and blackish. . . . We 'are assured that the hippopotamus produces 'but one at a time; that he lives upon fishes, 'crocodiles, and even cadaverous flesh. He 'eats, however, rice, grain, &c. though, if we 'consider the structure of his teeth, it would 'appear that Nature had not destined him for 'pasture, but for devouring other animals.'

Zerenghi finishes his description by informing us, that all these measures had been taken from the female subject, and that the male perfectly resembled her, except that, in all his dimensions, he was one third larger. It were to be wished that the figure given by Zerenghi had been equally good as his description: This animal, however, was not drawn from the life, but from the skin of the female. It likewise appears, that Fabius Columna took his figure from the same skin, which was preserved in salt. But Columna's description is not equal to that of Zerenghi; and he even merits reproach for mentioning only the name, and not the work, of this author, though it was published three years before his own. For example, Columna remarks, that, in his time, (1603,) Federico Zerenghi brought from Egypt to Italy an entire hippopotamus, preserved in salt, though Zerenghi himself tells us,

us, that he brought only the ſkin. Columna makes the body of his hippopotamus thirteen feet long *, and fourteen feet in circumference, and the legs three feet and a half in length; while, by the meaſures of Zerenghi, the body was only eleven feet two inches long, its circumference ten feet, the legs one foot ten inches and a half, &c. We can have no dependence, therefore, on Columna's deſcription: Neither can he be excuſed by ſuppoſing that his deſcription was taken from another ſubject; for it is evident, from his own words, that he deſcribed the ſmalleſt of Zerenghi's two hippopotami, ſince he acknowledges, that, ſome months afterwards, Zerenghi exhibited a ſecond hippopotamus, which was much larger than the firſt. I have inſiſted upon this point, becauſe no body has done juſtice to Zerenghi, though he merits the higheſt eulogiums. On the contrary, all naturaliſts, for theſe hundred

* Hippopotami a nobis conſpecti ac dimenſi corpus a capite ad caudam pedes erat tredecim, corporis latitudo ſive diameter pedes quatuor cum dimidio, ejuſdem altitudo pedes tres cum dimidio, ut planum potius quam carinoſum ventrem habeat: Orbis corporis quantum longitudo erat: Crura e terra ad ventrem pedes tres cum dimidio: Ambitus crurum pedes tres; pes latus pedem; ungulæ ſingulæ uncias tres: Caput vero latum pedes duo cum dimidio, longum pedes tres; craſſum ambitu pedes ſeptem cum dimidio: Oris rictus pedem unum, &c. Perhaps the foot uſed by Columna was ſhorter than the Paris foot. But this circumſtance will not juſtify him; for the body of his hippopotamus being thirteen feet long, its circumference ought to have been only eleven feet ſeven or eight inches, and not fourteen feet. The other proportions are equally erroneous; for they correſpond not with thoſe given by Zerenghi.

and

and ſixty years, have aſcribed to Fabius Columna what was due to Zerenghi alone; and, inſtead of inquiring after the work of the latter, they have contented themſelves with copying and praiſing that of Columna, though, with regard to this article, he is neither original, exact, nor even honeſt.

The deſcription and figures of the hippopotamus, which Proſper Alpinus publiſhed more than a hundred years after, are ſtill worſe than thoſe of Columna, having been drawn from ill preſerved ſkins; and M. Juſſieu *, who wrote upon the hippopotamus in the year 1724, has only deſcribed the bones of the head and feet.

By comparing theſe deſcriptions, and eſpecially that of Zerenghi, with the information derived from travellers †, it appears that the hippopotamus

* Mem. de l'Acad. de Sciences, ann. 1724, p. 209.

† In the river Nile there are *hippopotami* or *ſea-horſes*. In the year 1658, one of them was taken at Girge. It was ſoon brought to Cairo, where I ſaw it in the month of February of the ſame year; but it was dead. This animal was of a kind of tawny colour. Behind he reſembled the buffalo; but his legs were ſhorter and thicker. He was as tall as a camel. His muzzle reſembled that of an ox; but his body was twice as large. His head was ſimilar to that of a horſe, but larger. His eyes were ſmall, his neck very thick, his ears ſmall, his noſtrils very large and open, his feet very large, almoſt round, with four toes on each, like thoſe of the crocodile, and his tail ſmall. Like the elephant, he had little or no hair on the ſkin. In the under jaw, he had four large teeth, about half a foot in length. Two of them were crooked, and as thick as the horns of an ox. At firſt, he was miſtaken for a ſea

potamus is an animal whofe body is longer, and as thick as that of the rhinoceros; that his legs are much fhorter *; that his head is not fo long, but larger in proportion to his body; that he has no horns, either on the nofe, like the rhinoceros, or on the head, like the ruminating animals. As the cry he utters when pained is compofed, according to ancient authors and modern travellers †, of the neighing of a horfe and the

fea buffalo. But I, and fome others, who had read defcriptions of this animal, knew it to be a fea horfe. It was brought dead to Cairo by the Janiffaries, who fhot it on land, where it had come to feed. They poured feveral fhots into it before it fell; for, as I formerly remarked, a mufket ball hardly pierces its fkin. But one ball entered its jaw, and brought it to the ground. None of thefe animals had been feen at Cairo for a long time; *Relat. d'un Voyage du Levant, par Thevenot, tom.* i. *p.* 491.

* The legs of the hippopotamus are fo fhort, that the belly of the animal, when he walks, is not more than four inches above the ground; *Belon des Poiffons, p.* 17.—*Crura e terra ad ventrem pedes tres cum dimidio*; Fabius Columna, p. 31. The teftimonies of Belon and Columna, with regard to the length of the legs, differ fo widely, that none of their dimenfions can be adopted. It muft be remarked, that the hippopotamus which Belon faw alive, was very young and very fat; that, of courfe, his belly muft have been large and pendulous; that, on the contrary, the fkin defcribed by Columna, which was the fame with that of Zerenghi, had been dried with falt, and, confequently, Columna could not be certain that the belly of the animal was not *round* but *flat*. Thus the meafures of Belon are too fhort for an adult hippopotamus, and thofe of Columna too long for a living one. Hence we may infer from both, that, in general, the belly of this animal is not above a foot and a half from the ground; and that, as Zerenghi remarks, its legs exceed not two feet in length.

† Vocem equinam edit, illius gentis relatione; *Profp. Alp. Egypt.*

the bellowing of a buffalo, his ordinary voice may perhaps reſemble the neighing of a horſe, from which, however, he differs in every other reſpect. If this be the caſe, we may preſume that the animal has obtained the name *hippopotamus*, which ſignifies the *river-horſe*, ſolely from the ſimilarity of his voice to that of a horſe; in the ſame manner as the lynx, from his howling like a wolf, obtained the appellation of *lupus cervarius* *. The cutting, and particularly the canine teeth of the lower jaw, are very long, and ſo hard and ſtrong, that they ſtrike fire with ſteel †. This circumſtance, it is probable,

Egypt. Hiſt. Nat. lib. iv. *p.* 248.—Merolla ſays, that, in the river Zaira, there are river-horſes, which neigh like the common horſe; *Hiſt. Gen. des Voyages. par M. l'Abbé Prevoſt, tom.* v. *p.* 95. —This animal has derived his name from his neighing like a horſe; *Recueil des Voyages de la Compagnie des Indes de Hollande, tom.* iv. *p.* 440.—The neigh of the hippopotamus differs little from that of a horſe; but it is ſo loud as to be heard diſtinctly at the diſtance of more than a quarter of a league; *Voyage au Senegal, par M. Adanſon, p.* 73.

* See the article *Lynx*, vol. v. p. 206.

† Tutti i denti ſono di ſoſtantza coſi dura, che percoſſovi ſopra con un cortello, o accialino, buttano faville di foco in gran quantita, ma piu le zanne che gli altri; ma dentro non ſono di tanto dura materia; *Zerenghi, p.* 72. . . . Dentes habebat in inferiore maxilla ſex, quorum bini exteriores e regione longi ſemipedem, lati et trigoni uncias duas cum dimidio, per ambitum ſemipedem, aprorum modo parum retrorſum declives, non adunci, non exerti, ſed admodum conſpicui aperto ore. Intermedii vero parum a gingiva exerti trigona acie digitali longitudine, medium locum occupantes, veluti jacentes craſſi, orbiculati, elephantini ſemipedem ſuperant longitudine, atque aciem in extremis partibus planam parum

probable, gave riſe to the fable of the ancients, that the hippopotamus vomited fire from his mouth. The ſubſtance of the canine teeth is ſo white, ſo fine, and ſo hard, that it is preferable to ivory for making artificial teeth *. The cutting teeth, eſpecially thoſe of the under jaw, are very long, cylindrical, and chamfered. The canine teeth are alſo long, crooked, priſmatic, and ſharp like the tuſks of the wild boar. The grinders are ſquare or oblong, like thoſe of man,

parum detractam. Maxillares vero utrinque ſeptem craſſos latos breves admodum. In ſuperna vero mandibula, *quam crocodili more mobilem habet*, qua mandit et terit, anteriores ſex inſunt dentes, ſex imis reſpondentes acie contrario modo adaptata, leviſſima ac ſplendida, eboris politi modo, clauſoque ore conjunguntur, aptanturque imis, veluti ex illis reciſi, ut planum plano inſideat; verum omnium acies pyramidalis veluti oblique reciſi calami modo, ſed medii ſuperiores non aciem inferiorum, at medium illorum in quo detractio conſpicitur rotunditatis, petunt; ac non incidere, ſed potius illis terere poſſe videtur. Molares totidem quot inferni, ſed bini priores parvi exigui, atque rotundo ambitu, et ab aliis diſtant, ut medium palatum inter dentes anteriores occupare videantur; inter maxillares dentes linguæ locus ſemipedalis remanebat. Dentium vero color eburneus parum pallens, ſplendidus, diaphanus fere in acie videbatur; durities illorum ſilicea, vel magis cutelli quidem coſta non parva conſpicientium admiratione ignis excitabantur favillæ, parum vel nihil tot percuſſionibus ſigni remanente: Quapropter veriſimile foret noctis tempore dentes terendo ignem ex ore evomiſſe; *Fab. Columna, p.* 32.

* The fineſt and whiteſt teeth of the hippopotamus are found at Cape Meſurada in Africa. The dentiſts prefer them to ivory for making artificial teeth; becauſe they are harder, whiter, and do not turn yellow ſo ſoon; *Voyage de Deſmarchais, tom.* ii. *p.* 148.

and

and ſo large that a ſingle tooth weighs more than three pounds. The largeſt cutting and canine teeth are twelve * and ſometimes ſixteen inches long †, and each of them weighs from twelve to thirteen pounds ‡.

In fine, to give a juſt idea of the magnitude of the hippopotamus, we ſhall employ the meaſures of Zerenghi, and augment them one-third; becauſe theſe meaſures were taken from the female, which was one-third leſs than the male in all its dimenſions. This male hippopotamus was, of courſe, ſixteen feet nine inches long, from the extremity of the muzzle to the origin of the tail, fifteen feet in circumference, and ſix feet and a half high; and the legs were about two feet ten inches long. The head was three feet and a half in length, and eight feet and a

* Poſt menſes aliquot alium (hippopotamum) longe majorem, *idem*, Federicus Zerenghi, Romæ nobis oſtendit, cujus dentes aprini pedali longitudine fuerunt, proportione craſſiores, ſic et reliqua omnia majora.—This paſſage, which finiſhes Fabius Columna's deſcription, proves that it was taken from the female or ſmaller hippopotamus of Zerenghi, and that the largeſt, of which he gives no deſcription, was a male. It likewiſe proves that no dependence can be had on Columna's meaſures; for he is no where exact but in the dimenſions of the teeth, becauſe they can neither contract nor lengthen; but a ſkin dried in ſalt varies in all its dimenſions.

† I remarked, that theſe teeth, which were crooked in the form of an arch, were about ſixteen inches long, and that, where thickeſt, they were more than ſix inches in circumference; *Dampier's Voyages, tom.* iii. *p.* 360.

‡ As to the river-horſes, I never ſaw any of them; but I purchaſed ſome of their teeth which weighed thirteen pounds; *Relation de Thevenot, p.* 19.

half in circumference. The opening of the mouth was two feet four inches; and the largeſt teeth were more than a foot long.

With ſuch powerful arms, and ſuch prodigious ſtrength of body, the hippopotamus might render himſelf formidable to all other animals. But he is naturally mild *; beſides, he is ſo heavy and ſlow in his movements, that he could not overtake any quadruped. He ſwims faſter than he runs; and he purſues fiſhes, and preys upon them †. Though he delights in the water, and lives in it as freely as upon land; yet he has not, like the beaver or otter, membranes between his toes. The great ſize of his belly renders his ſpecific gravity nearly equal to that of water, and makes him ſwim with eaſe. Beſides, he continues long at the bottom of the water ‡, where he

* Qui hippopotamum animal terribile et crudele eſſe putarunt, falſi mihi videntur. Vidimus enim nos adeo manſuetum hoc animal, ut homines minime reformidaret, ſed benigne ſequeretur. Ingenio tam miti eſt, ut nullo negocio cicuretur, nec unquam morſu lædere conatur. . . . . Hippopotamum e ſtabulo ſolutum exire permittunt, nec metuunt ne mordeat. Rector ejus, cum ſpectatores oblectare libet, caput aliquot braſſicæ capitatæ, aut melopeponis partem, aut faſcem herbarum aut panem e manu ſublimi protendit feræ: Quod ea conſpicata tanto rictum hiatu diducit, ut leonis etiam hiantis caput facile ſuis faucibus caperet. Tum rector quod manu tenebat in voraginem illam ſeu ſaccum quempiam immittit. Manducat illa et devorat; *Bellonius de Aquatilibus*.

† The hippopotamus walks ſlowly on the banks of the rivers; but ſwims very quickly in the water. He lives upon fiſhes, and every thing he can ſeize; *Dampier, vol.* iii. *p.* 360.

‡ I have ſeen the hippopotamus deſcend to the bottom of three

he walks as in the open air; and, when he comes out of it to pasture, he eats sugar canes, rushes, millet, rice, roots, &c. of which he consumes great quantities, and does much damage in the cultivated fields. But, as he is more timid on land than in the water, it is not difficult to drive him off. His legs are so short, that, when at a distance from water, he cannot escape by flight. When in danger, his only resource is to plunge into the water, and travel under it a great way before he again appears. When hunted, he generally flies; but, when wounded, he returns with fury, darts boldly against the boats, seizes them with his teeth, tears pieces off them, and sometimes sinks them *. 'I have 'known,' says a traveller †, 'the hippopotamus open his mouth, and set one tooth on the 'gunnel of a boat, and another on the second 'strake from the keel (which was more than 'four feet distant), and there bit a hole through 'the plank, and sunk the boat; and, after he 'had done, he went away shaking his ears. His 'strength is incredibly great; for I have seen 'him, in the wash of the shore, when the sea 'has tossed in a Dutchman's boat with fourteen 'hogsheads of water in her, upon the said beast,

three fathoms water, and remain there more than half an hour, before he returned to the surface; *Id. ib.*

* Hippopotamus cymbis insidiatur quæ mercibus onustæ secundo Nigro feruntur, quas dorsi frequentibus gyris agitatas demergit; *Leon. Afric. Descript. tom.* ii. *p.* 758.

† Dampier, vol. ii. part ii. p. 105.

'and left it dry on its back; and another sea 'came and fetched the boat off, and the beast 'was not hurt, as far as I could perceive. How 'his teeth grow in his mouth I could not see; 'only that they were round like a bow, and 'about sixteen inches long; and in the biggest 'part more than six inches about. We made 'several shot at him; but to no purpose, for 'they would glance from him as from a wall. 'The natives call him *kittimpungo*, and say he 'is *Tetisso*, which is a kind of god; for no-'thing, they say, can kill him: And, if they 'should do to him as the white men do, he 'would soon destroy their canoes and fishing 'nets. Their custom is, when he comes near 'their canoes, to throw him fish; and then he 'passeth away, and will not meddle with their 'fishing craft. He doth most mischief when 'he can stand on the ground; but, when afloat, 'hath only power to bite. As our boat once 'lay near the shore, I saw him go under her, 'and with his back lift her out of the water, and 'overset her with six men aboard; but, as it 'happened, did them no harm. Whilst we lay 'in the road, we had three of them, which did 'trouble this bay every full and change, and 'two or three days after. The natives say, they 'go together, two males and one female. Their 'noise is much like the bellowing of a large 'calf.' These facts are sufficient to give an idea of the strength of this animal. Many similar

facts

facts are to be found in the General Hiſtory of Voyages, by the Abbé Prevoſt, where we have a complete and judicious collection * of all that has been delivered by travellers concerning the hippopotamus.

The individuals of this ſpecies are not numerous, and ſeem to be confined to the rivers of Africa. Moſt naturaliſts tell us, that the hippopotamus is alſo found in India. But the evidence they have of this fact appears to be equivocal. Alexander's † letter to Ariſtotle would be the moſt poſitive, if we could be certain that the animals mentioned in it were really hippopotami; which to me ſeems very problematical; for, if they were, Ariſtotle muſt have told us, in his hiſtory of animals, that the hippopotamus was a native of India as well as of Egypt. Oneſicritus ‡ and ſome old authors ſay, that the hippopotamus was found in the river Indus. But

* Hiſt Gen. des Voyages, tom. v. p. 95. 330.

† Humanas carnes hippopotamis pergratas eſſe, ex eis collegimus, quæ in libro Ariſtotelis de mirabilibus Indiæ habentur, ubi Alexander Macedo ſcribens ad Ariſtotelem inquit: 'Ducentos milites de Macedonibus, levibus armis, miſi per amnem nataturos; itaque quartam fluminis partem nataverunt, cum horrenda res viſu nobis conſpecta eſt, hippopotami inter profundos aquarum ruerunt gurgites, aptoſque milites nobis flentibus abſumpſerunt. Iratus ego tunc ex eis, qui nos in inſidias deducebant, centum et quinquaginta mitti in flumen juſſi, quos rurſus hippopotami juſta dignos pœna confecerunt;' *Aldrov. de Quad. Digit. p.* 188 et 189.

‡ In India quoque reperitur hippopotamus, ut *Oneſicritus* eſt autor, in amne Indo; *Hermolaus apud Gyſner de Piſcibus*, p. 417.

this fact has received no confirmation from modern travellers, at least from such of them as merit the greatest degree of credit: They all agree *, that the hippopotamus is found in the Nile, and Senegal or Niger, the Gambia, the Zaira, the other great rivers and lakes of Africa †, especially in the southern and eastern regions of that country. None of them say positively that this animal exists in Asia. Father Boym ‡ is the only one who seems to insinuate that the hippopotamus is found in Asia. But his relation appears to be suspicious, and, in my opinion, only proves that this animal is common in Mosambique, and all the eastern parts of Africa. At present, the hippopotamus, which the ancients call the *horse of the Nile*, is so rare in the lower Nile, that the inhabitants of Egypt are totally ignorant of the name §. He is equally unknown in all the northern

* Cosmographie du Levant, par André Thevet, p. 139.—Leonis Afric. Africæ Descript. tom. ii. p. 758.—L'Afrique de Marmol, tom. i. p. 51.; et tom. ii. p. 144.—Relation de Thevenot, tom. i. p. 491.—Relation de l'Ethiopie, par Poncel. Lettres Edif. 4. Recueil. p. 363.—Description de l'Egypte, par Maillet, tom. ii. p. 126.—Description du Cap de Bonne-Esperance, par Kolbe, tom. iii. p. 30.—Voyage de Flacourt, p. 394.—Histoire de l'Abyssinie, par Ludoff. p. 43 et 44.—Voyage au Senegal, par M. Adanson, p. 73. &c.

† Relation de l'Ethiopie, par Ch. Jacq. Poncel; Suite des Lettres Edifiantes, 4. Recueil. p. 363.

‡ Flora Sinensis, a P. Michaële Boym, p. 1.—La Chine Illustrée, par d'Alquié, p. 258.

§ With regard to animals, the present inhabitants of Egypt know nothing of the hippopotamus; *Shaw's Travels*.—The hippopotamus is produced in Æthiopia . . . descends by the Nile

thern parts of Africa, from the Mediterranean to the river Bambou, which runs at the foot of Mount Atlas. Hence the climate inhabited by the hippopotamus extends only from Senegal to Æthiopia, and from thence to the Cape of Good Hope.

As moſt authors mention the hippopotamus under the names of the *ſea-horſe*, or the *ſea-cow*, he has ſometimes been confounded with the latter, which inhabits only the Northern ſeas. It appears, therefore, to be certain, that the hippopotami, which the author of the Deſcription of Muſcovy ſays are found on the ſea-ſhore near Petzora, are nothing elſe than ſea-cows. Aldrovandus, therefore, merits reproach for adopting this opinion without examination, and maintaining that the hippopotamus is found in the North ſeas *; for he not only does not inhabit the

Nile into Upper Egypt . . . . deſolates the fields by devouring the grain, and particularly the Turkiſh wheat. . . . He is very rare in Lower Egypt; *Deſcript. de l'Egypte, ſur le Mem. de M. de Maillet, par M. l'Abbé Maſcrier, tom.* ii. *p.* 126.

* Sed quod magis mirandum eſt, in mari quoque verſari ſcripſit *Plinius*, qui agens de animantibus aquaticis, communes amni, terræ, et mari *crocodilos* et *hippopotamos* prædicabat. Idicirco non *debemus admiratione capi*, quando legitur in deſcriptione *Moſcoviæ*, in *oceano adjacenti regionibus Petzoræ*, *equos marinos creſcere*. *Pariter* Odoardus-Barboſa, Portughenſis, in Cefala obſervavit multos equos marinos, a mari ad prata exire, denuoque ad mare reverti. Idem repetit *Edoardus-Vuot*, de hujuſmodi feris in mari Indico errantibus. Propterea habetur in primo volumine navigationum, multos quandoque naucleros in terram deſcendere, ut hippopotamos in vicinis prates paſcentis comprehendant; ſed ipſi ad mare fugientes

the North ſeas, but it appears that he is rarely found in the South ſeas. The teſtimonies of Odoardus-Barboſa and Edward Wotton, quoted by Aldrovandus, and which ſeem to prove that the hippopotamus inhabits the Indian ſeas, are nearly as equivocal as that of the deſcriber of Muſcovy; and, I am inclined to think, with M. Adanſon *, that, now at leaſt the hippopotamus is found only in the great rivers of Africa. Kolbe †, who ſays he ſaw ſeveral of them at the Cape

fugientes eorum cymbas aggrediuntur, dentibus illas diſrumpendo et ſubmergendo, et tamen beſtiæ lanceis, ob cutis duritiem, ſauciari minime poterant; *Aldrov. de Quad. Digit. Vivip. p.* 181. *et ſeq.*

* In going up the Niger, we came to a quarter where the hippopotami or river-horſes are very common. This animal, which is the largeſt of the amphibious kind, is found only in the rivers of Africa, and in no other part of the world. He is generally ſaid to be of the figure of an ox; and, indeed, he reſembles that animal more than any other. But his legs are ſhorter, and his head is enormouſly large. With regard to ſize, the hippopotamus may be ranked after the elephant and rhinoceros. His jaws are armed with four tuſks, by which he tears up the roots of trees, which ſerve him for food. He cannot remain long under water without reſpiring, which obliges him to raiſe his head, from time to time, above the ſurface, like the crocodile; *Voyage au Senegal, par M. Adanſon, p.* 73.

† If the epithet *ſea* be applied to the hippopotamus or *ſea-horſe*, it is not becauſe he is a ſpecies of fiſh or lives always *in the ſea*. He comes upon the dry land in queſt of food, and he retires for ſafety to the *ſea* or to a *river*. Herbage is his ordinary food. When preſſed with hunger, he comes out of the water, in which he lies always in an extended poſture. When he raiſes his head above the water, he looks about on all ſides to ſee if there is any danger, and he ſcents a man at a conſider-

Cape of Good Hope, aſſures us, that they plunge equally into the ſea and the rivers; and the ſame thing

conſiderable diſtance. If he perceives any thing, he plunges again into the water, where he continues three hours without moving. . . . He generally weighs from two thouſand five hundred to three thouſand pounds. . . . The ſea-horſe, both in colour and ſize, reſembles the rhinoceros, only his legs are ſomewhat ſhorter. His head, as Tellez remarks, (lib. I. cap. 8.) has a greater reſemblance to that of the horſe, than to that of any other animal; and, from this circumſtance, he has derived his name. His mouth is much larger than that of the horſe, and, in this reſpect, he approaches nearer the ox. His noſtrils are very large; and, when he riſes to the ſurface of the river or ſea, he ſquirts the water out of them. His ears and eyes are remarkably ſmall. His legs are ſhort, and of an equal thickneſs throughout. His hoofs are not divided into two, like thoſe of the ox, but into four parts, on each of which there are ſpiral furrows. His tail is ſhort like that of the elephant, with a few ſhort hairs on it; and there is no hair on the reſt of the body.

The paps of the female hang, like thoſe of the cow, between the hind legs; but they, as well as the teats, are very ſmall in proportion to the ſize of the animal. I have often ſeen the mothers ſuckling their young, which were then as large as ſheep. . . . The ſkin of the river-horſe is more than an inch thick, and ſo hard that it is difficult to kill him even with muſket balls. The Europeans always aim at his head, where the ſkin is moſt tender, and eaſily pierced. This animal ſeldom receives a mortal wound in any other part of his body.

The teeth of the under jaw are very remarkable. They are four in number, two on each ſide, one of them crooked and the other ſtraight. They are as thick as an ox's horn, about a foot and a half long, and each of them weighs twelve pounds. They are very white, and never turn yellow with age, as ivory does. Hence they are more eſteemed than the teeth of the elephant.

The fleſh of this animal, whether boiled or roaſted, is moſt delicious.

thing is advanced by other authors. Though Kolbe is more exact than usual in his description of this animal, yet it is doubtful whether he saw it so frequently as he insinuates; for the figure he gives is still worse than those of Columna, Aldrovandus, and Prosper Alpinus, which were all drawn from stuffed skins. It is easy to perceive, that the descriptions and figures in Kolbe's works have not been taken on the spot, nor drawn from nature. His descriptions are written from memory, and most of the figures have been copied from those of other naturalists. The figure he has given of the hippopotamus has a great resemblance to the cheropotamus of Prosper Alpinus *.

Hence Kolbe, when he tells us that the hippopotamus inhabits the sea, has perhaps copied Pliny, instead of giving his own observations. Most authors relate that this animal is only found in fresh water lakes, and in rivers, sometimes near their mouths, but oftener at great distances from the sea. Some travellers are astonished that the hippopotamus should have been called the *sea-horse*; because, as Merollo

delicious. It is so highly valued at the Cape, as to sell at twelve or fifteen pence the pound. The fat sells as dear as the flesh: It is very mild and wholesome, and used instead of butter, &c.; *Descript. du Cap de Bonne-Esperance, par Kolbe, tom.* iii. *ch.* 3.

* *Note,* The figures of the cheropotami of Prosper Alpinus, *lib.* iv. *cap.* xii. *tab.* 22. seem to have been drawn from stuffed skins of hippopotami, from which the teeth appear to have been extracted.

remarks,

remarks *, this animal cannot endure ſalt water. He generally remains in the water during the day, and comes out in the night to paſture. The male and female ſeldom ſeparate. Zerenghi caught a male and a female the ſame day, and in the ſame ditch. The Dutch voyagers tell us, that the female brings forth three or four young at a time. But this fact is rendered ſuſpicious by the very evidence which Zerenghi quotes. Beſides, as the hippopotamus is of an enormous ſize, like the elephant, the rhinoceros, the whale, and all other large animals, it muſt produce but one at a time; This analogy ſeems to be more certain than the vague reports of travellers.

SUPPLEMENT.

M. Le Chevalier Bruce aſſured me, that, in his travels through Africa, he ſaw a number of hippopotami in Lake Tzana, which is ſituated in Upper Abyſſinia, near the true ſources of the Nile; and that, in this lake, which is at leaſt ſix leagues long by ten or twelve broad, the hippopotami are more numerous than in any other part of the world. He adds, that he ſaw ſome of them which were twenty feet long, with very thick ſhort legs.

* Hiſt. Gen. des Voyages, tom. v. p. 95.

Addition

Addition to the Article Hippopotamus, by Professor Allamand, Editor of the Dutch Edition of this Work.

TO complete the defcription of the adult hippopotamus given by M. de Buffon, nothing is wanting but a genuine figure of the animal. M. de Buffon, who is always original, chofe not to copy the figures publifhed by different authors. They are all too imperfect to be ufed; and, with regard to the animal itfelf, he could not poffibly procure it. Even in its native country, it is very rare, and too large to be tranfmitted without great expence and trouble. In the cabinet of natural curiofities in the univerfity of Leyden, there is a ftuffed fkin of the hippopotamus, which had been fent from the Cape of Good Hope. Though it had been tranfported to Holland more than a century ago, it has been fo well preferved, that it ftill exhibits an exact reprefentation of the animal. It is fupported by rings of iron, and by pieces of wood of fuch folidity, that drying has produced no confiderable alterations. As it is probably the only fpecimen of the kind in Europe, I am perfuaded that all lovers of natural knowledge will thank me for enriching the magnificent work of M. de Buffon with an exact engraving of it. The figure I have given reprefents the ani-

mal better than any that has hitherto been drawn, or, rather, it is the only figure we have of it; for, in all the others, the hippopotamus is not diſtinguiſhable, if we except that to be found in a Dutch book, concerning the Leviathan of Holy Writ, which was copied from the ſame model; but the proportions of the animal are not accurately obſerved.

It is unneceſſary to add a deſcription of this enormous animal, having no additions to what has been ſaid of it by M. de Buffon and M. Daubenton.

[As the figure of the young hippopotamus in the cabinet of the Prince of Conde differs from that which M. Allamand had engraved from the ſtuffed ſkin in the Leyden cabinet, and as it has a greater reſemblance to a new figure given by Dr. Klockner from another ſkin in the Prince of Orange's cabinet, I have here preferred the latter; and I ſhall add ſome remarks of the ſame author, which were tranſlated from the Dutch.]

Addition to M. de Buffon's Hiſtory of the Hippopotamus, by Dr. Klockner of Amſterdam.

I Am ſurpriſed that M. de Buffon takes no notice of a paſſage in Diodorus Siculus, concerning the hippopotamus, eſpecially as this ancient author

author remarks, that its voice resembled the neighing of a horse, which perhaps induced him to give it the denomination of *hippopotamus* or *river-horse*. M. de Buffon founded his opinion of this matter upon the testimonies of ancient and modern authors. Diodorus Siculus ought to have held the first rank among the former, since he not only travelled into Egypt, but is justly esteemed to be one of the best historians of antiquity. The following are the words of the passage alluded to: 'The Nile produces several animals, of which the crocodile 'and hippopotamus merit particular attention. '. . . The latter is five cubits in length. His 'feet are cloven like those of the ruminating 'animals; and in each jaw he has three tusks 'larger than those of the wild boar. The 'whole mass of his body resembles that of the 'elephant. His skin is harder and stronger 'than, perhaps, that of any other animal. He 'is amphibious, and remains, during the day, 'under the water, where he moves and acts in 'the same manner as if he were on land, which 'he visits in the night, in order to feed on the 'herbage of the mountains. If this animal were 'more prolific, he would commit great devastation in the cultivated fields of Egypt. The 'hunting of the hippopotamus requires a number of men, who endeavour to pierce him with 'iron daggers. They attack him with several 'boats joined together, and strike with crooked 'harpoons.

'harpoons. To ſome of theſe hooks they fix a 'rope, and then leave the animal to exhauſt 'himſelf with ſtruggling and the loſs of blood. 'His fleſh is very hard, and of difficult dige-'ſtion *.'

This is perhaps the beſt deſcription of the hippopotamus to be found among the ancients; for Diodorus commits not a ſingle error, but with regard to the number of the animal's toes.

Obſervations on the Mode of preparing the Skin of the Hippopotamus, now in the Prince of Orange's Cabinet, by Dr. Klockner.

I Received from the Hague, in a very dry ſtate, the ſkin of this hippopotamus, with the head incloſed within it. The ſkin had been firſt ſalted, then dried, and afterwards the ſkin of a young hippopotamus (which is likewiſe in the Prince's cabinet) ſteeped in brine, was, in a moiſt ſtate, put into the adult ſkin. After which, the whole was packed up in coarſe cloth, and tranſmitted from the Cape of Good Hope to Holland. The ſmall ſkin and the head, of courſe, produced a diſagreeable odour of rancid greaſe, which attracted the inſects, and they damaged the large ſkin that was firſt expoſed to their attacks.

* Diodor. Sicul. lib. i. p. 42. edit. Weſelingii.

When I diluted the head it ſwelled greatly. The opening of the mouth was more than ſixteen inches of Amſterdam meaſure *. The upper and under lips were ſufficiently large to cover all the animal's teeth, eſpecially as the inferior canine teeth are crooked, and ſlip along the curvature of the ſuperior, in the form of ſciſſars, and paſs into a ſocket formed by the ſkin of the lip and the gums. Between the cutting teeth and the cylindrical grinders, as well as between the tongue and cutting teeth, there is a ſmooth hard ſkin; and the palate is full of notches or hollows. The tongue had been cut out. . . . The fleſh on each ſide of the head had alſo been removed; and the fat which remained was corrupted. The whole, however, was interſperſed with very ſtrong muſcles, and the fleſh about the two lips was red and white, or of the colour of an ox's tongue.

Immediately behind the inferior canine teeth, there is a protuberance, which, when the mouth is ſhut, fills the ſpace between the canine teeth and grinders. This opening, though filled, has contracted one half in drying, as well as the lips.

Under the ears, and around the auditory paſſage, which is remarkably ſmall, as well as in the orbits of the eyes, there was a great quantity of fat.

The ears are placed upon an eminence, and in ſuch a manner as to form circular folds. The

* The Amſterdam foot is only ten inches five lines of the French foot.

elevation of the right ear was much diminiſhed in drying; but it was conſpicuous on the left.

We know that the ears of the hippopotamus are very ſmall. But thoſe of our ſubject had been conſiderably diminiſhed by inſects. The internal part of the ears is garniſhed with fine cloſe hair; but there is a very little hair on the outſide.

The eyes muſt have been very ſmall; for the ſockets were uncommonly ſmall in proportion to the magnitude of the animal. The eyes I placed in my ſubject are perhaps larger than nature; but, when I uſed ſmaller ones, they did not ſeem to correſpond with the animal.

The noſtrils ſlope downward, and have a ſmall aperture. They are afterwards joined internally by a ſmall crooked line. When the ſkin was dry, it was difficult to perceive theſe tubes. I enlarged them a little before the ſkin was again dried.

I muſt here remark, that I only found thirty-two teeth in this hippopotamus, which accords not either with Zerenghi's or M. Daubenton's deſcriptions. The firſt ſays, that he found forty-four teeth in his ſubjects; and the ſecond found thirty-ſix in the head preſerved in the Royal Cabinet. This difference excited my attention: But I could perceive no marks of teeth having fallen out, except one of the cutting teeth, which ſeemed to have been broken. There are four canine teeth placed perpendicularly, eight cutting teeth, four in the upper jaw, which are per-

 pendicular,

pendicular, and four in the under jaw, placed horizontally, as may be ſeen in the figure. Beſides, I found two grinders in each ſide of the under jaw, and three teeth, placed before the grinders, which had the form of kayles. In each ſide of the upper jaw, were three grinders, and two of theſe cylindrical teeth. Between theſe cylindrical teeth, there is a ſpace of about half an inch.

[I muſt here remark, ſays the Count de Buffon, that the hippopotamus has commonly thirty-ſix teeth, namely, four cutting teeth above, and four below, and two canine teeth and twelve grinders in each jaw. This obſervation has been verified by three heads, which have long remained in the Royal Cabinet, and by a fourth head, which was tranſmitted to me in the month of December 1775, by M. de Sartine, ſecretary of ſtate to the marine department. The laſt grinder, at the bottom of the mouth, is much thicker, broader, and flatter on the edge, than the other five. But I am inclined to think that the number of grinders varies according to the age of the animal; and that, inſtead of twenty-four, we may ſometimes find twenty-eight, and even thirty-two, which, as Zerenghi remarks, would make forty-four in all.]

The upper and under lips, continues Dr. Klockner, are garniſhed, at conſiderable diſtances, with ſmall tufts of hair, which, like pencils, proceed from one tube. I counted about twenty of them. I exa-

I examined a ſection of one of theſe tubes with the microſcope, and found ſeven roots iſſuing from one tube. Theſe ſeven roots afterwards ſplit, and each gave riſe to ſeveral hairs, which formed a kind of pencil.

On the ſides of the mouth, toward the lower part, I ſaw ſome fine hairs, which were placed nearer each other than the former.

Beſides, I found here and there upon the body ſome ſcattered hairs; but there were none upon the legs, flanks, or belly.

The extremity and edges of the tail were garniſhed with pencils of hair, like the noſe; but they were a little longer.

I could not diſcover the ſex of this animal. Near the fundament there was a kind of triangular pinked aperture, about ſix inches wide, where I imagined the organs of generation had been ſituated; but, as no veſtige of them remained, it was impoſſible to aſcertain the ſex.

The ſkin of the belly, near the hind legs, was an inch and nine lines thick: Here the inſects had made a hole, which rendered it an eaſy matter to meaſure the thickneſs. The ſubſtance of the ſkin was white, cartilaginous, and coriaceous; and, at this place, it was well ſeparated from the fat and fleſh. Higher up, toward the back, a good deal of the ſkin had been pared off, with a view, no doubt, to render it lighter for carriage. It was for this reaſon that the ſkin

about the ſpine exceeded not an inch in thickneſs.

The toes were furniſhed with nails. The ſkin between the toes were very wide; and I believe that the feet of this animal, when alive, were rather flat than round. The heel, which is placed high and backward, appeared to be well adapted for ſwimming. The hoof, though thick and hardened, was nevertheleſs flexible.

The dimenſions of this animal were nearly the ſame with thoſe of Zerenghi's female hippopotamus, formerly deſcribed.

I was told, that this hippopotamus had advanced a great way upon land in the territories of the Cape, and even near the place called the *Mountains of ſnow*, when it was ſhot by Charles Marais, a peaſant of French extraction. This peaſant brought the ſkin to M. de Piettenberg, Governour of the Cape, who tranſmitted it to his Highneſs the Prince. I had the relation from a nephew of C. Marais, who reſides in Amſterdam. According to the account given by this man, who had it from the mouth of Marais, the hippopotamus runs extremely ſwift, both in marſhy places and on the firm ground. It is for this reaſon that the peaſants, though excellent hunters, dare not fire upon him but when he is in the water. They lie in wait for him about ſunſet, when the animal raiſes his head above the water; and keeps his ſmall ears in perpetual agitation, in order to hear if any noiſe is near.

When

When any object of prey appears upon the water, he darts upon it like an arrow from a bow. While the hippopotamus is liftening in this manner, and floating on the furface of the water, the hunters endeavour to fhoot him in the head. The one whofe fkin I ftuffed was fhot between the eye and the right ear; and the young one, which is alfo in the Prince's cabinet, had been fhot, or ftruck with an harpoon, in the breaft, as appears from infpection. When he feels that he is wounded, he plunges below the water, and walks or fwims till he lofes both motion and life. Then, by means of about twenty oxen, he is dragged on fhore and diffected. An adult hippopotamus generally yields about two thoufand pounds of fat, which is falted and fent to the Cape, where it fells very dear. This fat or lard is extremely good, and in relifh excels all others. When preffed, it yields a mild oil, as white as cream. In Africa, it is recommended as a fovereign remedy for difeafes of the breaft. The quantity of lard derived from an individual, demonftrates that this animal is of a furprifing weight and magnitude.

Before finifhing my remark, I fhall here add fome particulars, regarding the natural hiftory of the hippopotamus, which are not to be found in the preceding defcription.

We have feen, that the hippopotamus probably derived his name from the refemblance of his voice to the neighing of a horfe. From the

most authentic accounts, however, it appears that his cry has a greater similarity to that of the elephant, or to the stammering and indistinct sounds uttered by deaf persons. Beside this cry, the hippopotamus, when asleep, makes a kind of snorting noise, which betrays him at a distance. To prevent the danger arising from this circumstance, he generally lies among the reeds that grow upon marshy grounds, and which it is difficult to approach.

I can no where find the remark of Marais, concerning the agility of this animal, confirmed. We are perpetually assured, on the contrary, that the hunters choose rather to attack him on land than in the water, which indicates, that they are not afraid of his swiftness. According to other historians, his return to the river is cut off by trees and ditches; because they know that he uniformly inclines to regain the water, where he has no other animal to fear, rather than to fight or fly upon land. The great shark and the crocodile avoid the hippopotamus, and dare not engage with him.

The skin of the hippopotamus is so extremely hard on the back, the crupper, and the external parts of the thighs and buttocks, that neither arrows nor musket balls can pierce it. But it is softer and thinner on the inside of the thighs and belly, where the hunters endeavour to shoot him, or to pierce him with a javelin. He is extremely tenacious of life; and, therefore, they

try

try to break his legs by large blunderbuſſes, charged with iron wedges. When they ſucceed, they are full maſters of the animal. The Negroes, who attack the ſharks and crocodiles with long knives and javelins, are afraid of the hippopotamus, and would perhaps never attempt to combat him, unleſs they knew that they could outrun him. They believe, however, that this animal has a ſtronger antipathy to the Whites than to the Blacks.

The female brings forth on land, where ſhe ſuckles her young, and ſoon teaches it to take refuge in the water, when the ſmalleſt noiſe is heard.

The Negroes of Angola, Congo, Elmina, and, in general, of the whole weſt coaſt of Africa, regard the hippopotamus as one of thoſe inferior divinities which they call *Fetiches*. They ſcruple not, however, to eat his fleſh, when they can procure it.

I am uncertain whether I ſhould here quote a paſſage from P. Labat, where he ſays that the hippopotamus, who is of a very ſanguiferous temperament, knows how to let blood of himſelf. For this purpoſe, he remarks, the animal ſearches for a ſharp-pointed rock, and rubs himſelf againſt it, till he makes a ſufficient aperture for the blood to flow. To promote the flux, he agitates his body ; and when he thinks he has loſt a ſufficient quantity, he rolls in the mud in

order

order to ſhut up the wound. In this ſtory there is nothing impoſſible; but how could P. Labat diſcover ſuch a ſingular operation?

Beſide the uſes to which the ſkin and teeth of the hippopotamus are applied, we are aſſured that the Indian painters employ the blood of this animal as one of their colours.

Plate CLXXXVII.

A. Bell Sculp.t

HIPPOPOTAMUS.

The ELK * and the RAIN-DEER **.

THOUGH the elk and rain-deer are animals of different ſpecies, yet, as it would be difficult to give the hiſtory of the one without

* The elk has horns with ſhort beams ſpreading into large and broad palms, one ſide of which is plain, the outmoſt furniſhed with ſeveral ſharp ſnags. It has no brow antlers. The largeſt horn I have ſeen is in the houſe belonging to the Hudſon's Bay company, and weighed 56 pounds. The length is 33 inches, between tip and tip 34, and the breadth of the palm 13½. There is in the ſame place an excellent picture of an elk which was killed in the preſence of Charles XI. of Sweden, and weighed 1229 pounds. It is a very deformed and ſeemingly diſproportioned beaſt. A young female, of about a year old, was to the top of the withers 5 feet or fifteen hands. The head alone was two feet, and the length of the whole animal, from noſe to tail, was about ſeven feet. The neck was much ſhorter than the head, with a ſhort, thick, upright mane, of a light brown colour. The eyes were ſmall, the ears one foot long, very broad and ſlouching, and the noſtrils very large. The upper lip was ſquare, hung greatly over the lower, and had a deep ſulcus in the middle, ſo as to appear almoſt bifid. The noſe was very broad. Under the throat was a ſmall excreſcence, from whence hung a long tuft of coarſe black hair. The withers were very high, and the fore-feet three feet three inches long. From the bottom of the hoof to the end of the tibia was two feet four inches. The hind legs were much ſhorter than the fore-legs. The hoofs were much cloven; and the tail is very ſhort, duſky above, and white beneath. The general colour of the body was

out encroaching on that of the other, we find it convenient to treat of them under one article. Moſt ancient, as well as modern authors, have confounded

was a hoary black, but more gray above the face than any where elſe. This animal was living laſt ſpring at the Marquis of Rockingham's houſe, at Parſon's-green; *Pennant's Synopſ. of Quad. p.* 40.

In the Celtic language, *Elch*; in modern Latin, *Alce*; in Greek, *αλκη*; in German, *Hellend*, or *Ellend*; in Poliſh, *Loſs*; in Swediſh, *Oelg*; in Ruſs, *Lozzi*; in Norwegian, *Ælg*; in Chineſe, *Han-ta-han*; in Canada, *Orignal*; in French, *Elan*.

Alce, machlis; *Plin. lib.* viii. *c.* 15. *Geſner, Quad. p.* 1. *Munſter, Coſmog. p.* 883.

Cervus palmatus, alce vera et ligitima; *Klein. Quad. p.* 24.

Cervus cornibus ab imo ad ſummum palmatis; *Briſſon. Quad. p.* 6. *Faunul. Sinenſ.*

Cervus alces, cornibus acaulibus palmatis, caruncula gutturali; *Linn. Syſt. Nat. p.* 92.

Elk; *Raii Syn. Quad. p.* 86. *Scheffer. Lapl. p.* 133. *Bell's Trav. vol.* i. *p.* 5. 215. 322.

** The rain deer has large but ſlender horns, bending forward, the top palmated, brow antlers broad and palmated. Both ſexes have horns; thoſe of the female are leſs and with fewer branches. A pair from Greenland were three feet nine inches long, two feet and a half from tip to tip, and weighed nine pounds twelve ounces. The height of a full grown rain is four feet ſix inches. The ſpace round the eye is always black. When it firſt ſheds its coat, the hairs are of a browniſh aſh colour, and afterwards change to white. The hairs are very cloſe ſet together, and, along the fore part of the neck, they are very long and pendent. The hoofs are large, and the tail ſhort; *Pennant's Synopſ. of Quad. p.* 46.

The rain-deer was unknown to the Greeks. In French, *Rangier, Ranglier, le Renne*; in Latin, *Tarandus*; in Norwegian, *Reben*; in Lapland, *Boetſoi*; in German, *Reenthier*; in Swediſh, *Rhen*; in Canada, *Caribou*; in modern Latin, *Rangifer*. ——In partibus magnæ Lapponiæ beſtia eſt de genere cervorum.——Rangifer duplici ratione dicta; una quod in capite

confounded them, or exhibited them under equivocal denominations, which are equally applicable to both. The Greeks knew neither the elk nor the rain-deer; for Ariſtotle * makes no mention of them: And, among the Latins, Julius Cæſar is the firſt who employed the word *alce*. Pauſanius †, who wrote about a century after Cæſar,

pite ferat alta cornua velut quos quercinarum arborum ramos: Alia quod inſtrumenta cornibus pectorique, quibus hiemalia plauſtra trahit impoſita *Rancha* et *Locha*, patrio ſermone vocantur; *Olai Magni. Hiſt. de Gent. Sept. p.* 135.

Rangier or Ranglier; *Gaſton, de Foix apud du Fouilloux, p.* 90.

Tarandus, Rangifer; *Geſner, Quad. p.* 839. *Icon. Quad. p.* 57. *Aldrov. de Quad. Biſulc. p.* 859.

Cervus mirabilis; *Johnſton, de Quad. tab.* xxxvi. *Munſter Coſmog, p.* 1054.

Cervus rangifer; *Raii Synopſ. Quad. p.* 88. *Klein. Quad. p.* 23.

Daim de Groenland; Edwards; *Hiſt. des Oiſeaux, part.* i. *p.* 51.

Cervus cornuum ſummitatibus omnibus palmatis; *Briſſon, Regn. Anim. p.* 92.

Cervus Tarandus, cornubus ramoſis, recurvatis, teretibus, ſummitatibus palmatis; *Linn. Syſt. Nat. p.* 93.

Rein-deer; *Schæffer. Suppl. p.* 82. 129. *Le Brun's Travels, vol.* i. *p.* 10. *Oeuvres de Maupertuis, tom.* iii. *p.* 198. *Voyage d'Othier, p.* 141. *Hiſt. Kamtſchatka, p.* 228. *Bell's Travels, vol.* i. *p.* 213. *Martin's Spitzberg. p.* 99. *Crantz's Greenland, vol.* i. *p.* 70. *Egede Greenl. p.* 60. *Dobb's Hudſon's Bay, p.* 20. 22. *Voyage au Hudſ. Bay, tom.* ii. *p.* 17.

Rheno; *Linn. Amœn. Acad. p.* 4.

La Caribou; *Charlevoix, Hiſt. Nouv. France, tom.* v. *p.* 190.

* We have ſhown, under the article *Axis*, that the hippelaphus of Ariſtotle is not the elk.

† Argumento ſunt Æthiopici tauri et *alces* feræ Celticæ, ex quibus mares cornua in ſuperciliis habent; fœmina caret. *Pauſan.*

Cæſar, is the firſt Greek author in which the name Αλκη occurs; and Pliny *, who was nearly contemporary with Pauſanias, has given ſome obſcure

Pauſan. in Eliacis ——— *Alce* nominata fera ſpecie inter cervum et camelum eſt; naſcitur apud Celtas; explorari inveſtigarique ab hominibus animalium ſola non poteſt, ſed obiter aliquando dum alias venantur feras, hæc etiam incidit. Sagaciſſimam eſſe aiunt, et hominis odore per longinquum intervallum percepto, in foveas et profundiſſimos ſpecus ſeſe abdere. Venatores montem vel campum ad mille ſtadia circundant, et contracto ſubinde ambitu, niſi intra illum fera delitefcat, non alia ratione eam capere poſſunt; *Idem. In Bæoticis.*

* Septentrio fert et equorum greges ferorum, ſicut aſinorum Aſia et Africa: Præter ea alcem, ni proceritas aurium et cervicis diſtinguat, jumenta ſimilem: Item notam in Scandinavia inſula, nec unquam viſam in hoc orbe, multis tamen narratam, *machlin*, haud diſſimilem illi, ſed nullo ſuffraginum flexu; ideoque non cubantem, ſed acclivem arbori in ſomno, eaque inciſa ad inſidias, capi; velocitatis memoratæ. Labrum ei ſuperius prægrande: Ob id retrograditur in paſcendo, ne in priora tendens, involvatur; *Plin. Hiſt. Nat. lib.* viii. *cap.* 15. ——— Mutat colores et Schytarum tarandus. ——— Tarando magnitudo quæ bovi, caput majus cervino, nec abſimile; cornua ramoſa; ungulæ bifidæ: Villus magnitudine urſorum, ſed cum libuit ſui coloris eſſe, aſini ſimilis eſt: Tergoris tanta duritia ut thoraces ex eo faciant. ——— Metuens latet, ideoque raro capitur; *Plin. Hiſt. Nat. lib.* viii. *cap.* 34. ——— I have quoted theſe two paſſages of Pliny, in which, under the denomination of *alce*, *machlis* and *tarandus*, he ſeems to point out three different animals. But I ſhall afterwards ſhow, that both *machlis* and *alce* apply ſolely to the elk; and that, though moſt naturaliſts believe the *tarandus* of Pliny to be the elk, it is much more probable that he means the rain-deer by this appellation. I acknowledge, however, that the indications of Pliny are ſo confuſed, and even falſe, that it is difficult to determine this point with preciſion. The commentators upon Pliny, though they had much erudition, were

obſcure intimations of the elk and rain-deer under the appellations of *alce*, *machlis*, and *tarandus*. The name *alce*, therefore, cannot be properly conſidered as either Greek or Latin; but it appears to have been derived from the Celtic language, in which the elk is called *elch* or *elk*. The Latin name of the rain-deer is ſtill more uncertain. Several naturaliſts have thought that it was the *machlis* of Pliny; becauſe this author, when ſpeaking of the northern animals, mentions, at the ſame time, the *alce* and the *machlis*; the laſt of which, he remarks, is peculiar to Scandinavia, and was never ſeen either at Rome, or any part of the Roman empire. In Cæſar's Commentaries*, however, we find a paſſage, which can

were but little verſed in natural hiſtory; and this is one reaſon why we find ſo many obſcure and ill interpreted paſſages in his writings. The ſame work is applicable to the commentators and tranſlators of Ariſtotle. We ſhall, therefore, endeavour to reſtore ſome words which have been changed, and to correct ſome paſſages of thoſe two authors that have been corrupted.

* Eſt bos in Hercinia ſilva, cervi figura, cujus a media fronte inter aures unum cornu exiſtit excelſius, magiſque directum his quæ nobis nota ſunt cornibus: Ab ejus ſummo ſicut palmæ ramique late diffunduntur. Eadem eſt fœminæ mariſque natura; eadem forma, magnitudoque cornuum; *Jul. Cæſar de Bello Gallico, lib.* vi. *Note*, This paſſage is deciſive. The rain-deer, in fact, has brow antlers which ſeem to form an intermediate horn. His horns are divided into ſeveral branches, terminated by large palms; and the female has horns as well as the male. But the females of the elk, the ſtag, the fallow-deer, and the roe-deer, have no horns. Hence it

can apply to no other animal than the rain-deer, and ſeems to prove that it then exiſted in the foreſts of Germany: and Gaſton Phœbus, fifteen centuries after Julius Cæſar, ſeems to ſpeak of the rain-deer, under the name of *rangier*, as an animal, which, in his time, exiſted in the foreſts of France. He has even given a good deſcription * of this animal, and of the manner of

it is apparent, that the animal here pointed out by Cæſar, is the rain-deer, and not the elk; eſpecially as, in another place, he mentions the elk, under the name of *alce*, in the following terms: Sunt item in Hercinia ſilva quæ appellantur *alces*: Harum eſt conſimilis capris (*capreis*) figura et varietas pellium: Sed magnitudine paulo antecedunt mutilæ quæ ſunt cornibus et crura ſine nodis, articuliſque habent, neque quietis cauſa procumbunt.—His ſunt arbores pro cubilibus: Ad eas ſe applicant: Atque ita paulum modo reclinatæ quietem capiunt: Quarum ex veſtigiis cum eſt animadverſum a venatoribus quo ſe recipere conſueverint, omnes eo loco aut a radicibus ſubruunt aut abſcindunt arbores, tantum ut ſumma ſpecies earum ſtantium relinquatur: Huc cum ſe conſuetudine reclinaverint, infirmas arbores pondere affligunt atque una ipſæ concidunt; *de Bello Gallico, lib.* vi. I allow that this ſecond paſſage contains nothing preciſe but the name *alce*; and, to make it apply to the elk, the word *capreis* muſt be ſubſtituted for *capris*; and we muſt ſuppoſe, at the ſame time, that Cæſar had only ſeen female elks, which have no horns. All the reſt is intelligible; for the elk has very ſtiff limbs; that is, their articulations are very firm and cloſe; and, as the ancients believed, that there were animals, ſuch as the elephant, which could neither bend their limbs nor lie down, it is not ſurpriſing that they attribute to the elk this fabulous ſtory of the elephant.

* The *rangier* or *ranglier* is an animal that reſembles the ſtag; but his horns are larger and much more branched. When hunted, he flies, on account of the great weight on his head.

of hunting it. As his deſcription cannot apply to the elk, and as he gives, at the ſame time, the mode of hunting the ſtag, the fallow deer, the roebuck, the wild goat, the chamois goat, &c. it cannot be alledged, that, under the article *rangier*, he meant any of theſe animals, or that he had been deceived in the application of the name. It is apparent, therefore, from theſe poſitive evidences, that the rain-deer formerly exiſted in France, eſpecially in the mountainous parts, ſuch as the Pyrennees, in the neighbourhood of which Gaſton Phæbus reſided, as Lord of the county of Foix; and that, ſince this period, they have been deſtroyed, like the ſtags which were formerly

head. But, after running long, and doubling, he places his buttocks againſt a tree, to prevent any attack from behind, and bends his head toward the ground. In this ſituation, the dogs dare not approach him, becauſe his whole body is defended by his horns. If they come behind him, he ſtrikes them with his heels. The grey-hounds and bull-dogs are terrified when they ſee his horns. The rangier is not taller than the fallow-deer; but he is much thicker. When he rears his horns backward, they cover his whole body. He feeds like the ſtag or fallow-deer, and throws his dung in cluſters. He lives very long. The hunters ſhoot him with arrows, or take him with different kinds of ſnares. He is fatter than a ſtag. Like the fallow-deer, he follows the ſtag in the rutting ſeaſon.

As to the manner of hunting the *rangier* or *ranglier*; when the hunters go in queſt of this animal, they ſhould ſeparate the dogs, to prevent his running into the thickeſt parts of the foreſt, which are inhabited by the fallow-deer and roebucks. He ſhould ſeparate his nets and ſnares according to the ſituation of the foreſt, and lead his hounds through the wood. As the horns of the rangier are high and heavy, few hunters attempt to ſeize him with hounds; *La Venerie de Jacques Dufouilloux, p. 97.*

common in this country, and which now exiſt not in Bigore, Couſerans, nor in the adjacent provinces. It is certain that the rain-deer is found only in more northern latitudes. But we likewiſe know, that the climate of France was formerly much moiſter and colder, on account of the many foreſts and marſhes which have ſince been cut down and drained. From the Emperor Julian's letter, we learn what was the rigour of the froſt at Paris in his time. The deſcription he gives of the ice on the Seine is perfectly the ſame with what the Canadians tell us of the ice on the rivers of Quebec. Gaul, under the ſame latitude with Canada, was, two thouſand years ago, exactly what Canada is at preſent, namely, a climate ſufficiently cold to nouriſh animals which are now found only in the more northern regions.

From all theſe facts, therefore, it is evident, that the elk and the rain-deer formerly exiſted in the foreſts of Gaul and Germany; and that the paſſages in the Commentaries of Cæſar can apply to no other animals. In proportion as the lands were cleared, and the waters dried up, the temperature of the climate would become more mild, theſe animals, who delight in cold, would firſt abandon the flat countries, and retire to the ſnowy mountains, where they ſtill ſubſiſted in the days of Gaſton de Foix. The reaſon why they are no longer found there is obvious: The heat of the climate has been gra-

dually

dually augmented by the almoſt total deſtruction of the foreſts, by the ſucceſſive lowering of the mountains, by the diminution of the waters, by the multiplication of the human race, and by culture and improvement of every kind. It appears, likewiſe, that Pliny has borrowed from Cæſar almoſt every thing he has ſaid of theſe two animals, and that he was the firſt who introduced confuſion into their names. The *alce* and the *machlis* he mentions at the ſame time; from which we are led to conclude that theſe two names denote two different animals*. But, if we conſider, 1. That he mentions the *alce* only once, without giving any deſcription of it; 2. That he only employs the word *machlis*, which is neither Greek nor Latin, but ſeems to have been coined †, and, according to his commentators, is changed into *alce* in ſeveral ancient manuſcripts; 3. That he attributes to the *machlis* all that Julius Cæſar has ſaid of the

* Several of our moſt learned naturaliſts, and particularly Mr. Ray, have thought that the *machlis*, being placed ſo near the *alce*, could be no other than the rain-deer. *Cervus rangifer, the rain-deer*; *Plinio machlis*; *Raii Synopſ. Quad. p.* 88. Becauſe I am by no means of the ſame opinion, I have here given a detail of my reaſons.

† On the margin of this paſſage of Pliny, we have *achlin*, inſtead of *machlin*: *Fortaſſis achlin, quod non cubet*, ſay the commentators. This name, therefore, appears to have been coined on the ſuppoſition that the animal cannot lie down. On the other hand, by tranſpoſing the *l* in *alce*, they have made *acle*, which differs little from *achlis*. Hence we may ſtill farther conclude, that this word has been corrupted by the tranſcribers, eſpecially as we find *alcem*, inſtead of *machlin*, in ſeveral ancient manuſcripts.

 alce;

alce; the paſſage of Pliny muſt unqueſtionably have been corrupted, and theſe two names muſt denote the ſame animal, namely the *elk*. The deciſion of this queſtion will reſolve another. As the *machlis* is the *elk*, the *tarandus* muſt be the *rain-deer*. The name *tarandus* is found in no other author before Pliny, and has given riſe to various interpretations. Agricola and Elliot, however, have not heſitated to apply it to the rain-deer; and, for the reaſon above aſſigned, we willingly ſubſcribe to their opinion. Beſides, we ſhould not be ſurpriſed at the ſilence of the Greeks, nor at the ambiguity with which the Latins have mentioned theſe animals; ſince the northern regions were abſolutely unknown to the former, and the latter had all their information concerning theſe regions from the relations of others.

Now, in Europe and Aſia, the elk is found only on this ſide, and the rain-deer beyond, the Polar circle. In America, we meet with them in lower latitudes; becauſe there the cold is greater than in Europe. The rain-deer, being able to endure the moſt exceſſive cold, is found in Spitzbergen*; he is alſo very common in Greenland,

* In every part of Spitzbergen, the rain-deer are found, but particularly in *Rehen-feld*, a place which received its name from the number of rain-deer it produces. They are alſo very numerous in Foreland, near Muſcle-Haven.——We arrived in this country in the ſpring, and killed ſome rain-deer, which were very meager; from which circumſtance we conclude, that, notwithſtanding the unfertility and coldneſs of Spitzbergen,

land *, and in the moſt northern regions of Lapland † and of Aſia ‡. The elk approaches not ſo

Spitzbergen, theſe animals make a ſhift to paſs the winter there, and to live upon the ſmall quantity of food they can procure; *Recueil des Voyages au Nord, tom.* ii. *p.* 113.

* Captain Craycott, in the year 1738, brought a male and a female rain-deer from Greenland to London; *Edwards's Hiſt. of Birds, p.* 51. where we have a deſcription and figure of this animal under the name of the *Greenland fallow-deer*, which, as well as the *Greenland roebuck*, or *Caprea Groenlendica*, mentioned by Grew, in his Deſcription of the Muſeum of the Royal Society, can be nothing elſe but the rain-deer. Both theſe authors, in their deſcriptions, mention, as a peculiar character, the down with which the horns of theſe animals were covered. This character, however, is common to the rain-deer, the ſtag, the fallow-deer, and all the deer kind. This hair or down continues on the horns during the ſummer ſeaſon, which is the time when they are growing, and the only time that veſſels can ſail to Greenland. It is not, therefore, ſurpriſing that, during this ſeaſon, the horns of the rain-deer ſhould be covered with down. Hence this character is of no importance in the deſcriptions given by theſe authors.

Upon the coaſts of Frobiſher's Straits, there are ſtags nearly of the colour of aſſes, and whoſe horns are higher and much larger than thoſe of our ſtags. Their feet are from ſeven to eight inches in circumference, and reſemble thoſe of our oxen; *Lade's Voy. tom.* ii. *p.* 297. *Note*, This paſſage ſeems to have been copied from Captain Martin's Voyage, p. 17. where he remarks, 'There are great numbers of ſtags on 'the lands of Warwick road, the ſkin of which reſembles 'that of our aſſes. Their head and horns, both in length and 'breadth, ſurpaſs thoſe of our ſtags. Their foot is as large 'as that of an ox, being eight inches broad.'

† The rain-deer are numerous in the country of the Samoiedes, and over all the north; *Voyage d'Olearius, tom.* i. *p.* 126. *L'Hiſt. de la Lapponie, par Scheffer, p.* 209.

‡ The Oſtiacks of Siberia, as well as the Samoiedes, employ rain-deer and dogs for drawing their carriages; *Nouv. Mem. de la Grande Ruſſie, tom.* ii. *p.* 181.——Among the Tonguese, there are great numbers of rain-deer, elks, bears, &c.; *Voyage de Gmelin, tom.* ii. *p.* 206.

near the pole, but inhabits Norway *, Sweden †, Poland ‡, Lithuania ||, Ruſſia §, and Siberia and Tartary **, as far as the north of China. In Canada, and in all the northern parts of America, we meet with the elk, under the name of

* See the chaſe of the elk in Norway, by the Sieur de la Martiniere, in his Voyage to the North, p. 10.

† Alces habitat in ſilvis Sueciæ, rarius obvius hodie, quam olim; *Linn. Fauna Suecica, p.* 13.

‡ Tenent alces prægrandes Albæ Ruſſiæ ſylvæ, fovent Palatinatis varii, Novogrodenſis, Breſtianenſis, Kiovienſis, Volhinenſis circa *Stepan*, Sandomirienſis circa *Niſko*, Livonienſis in Capitaneatibus quatuor ad Poloniæ regnum pertinentibus, Varmia iis non deſtituitur; *Rzaczynſki auctuarium, p.* 305.

|| The *Loſſ* of the Lithuanians, the *Lozzi* of the Muſcovites, the *Oelg* of the Norwegians, the *Elend* of the Germans, and the *Alce* of the Latins, denote the ſame animal: It is very different from the Norwegian *Rhen*, which is the rain-deer. . . . . . . No elks are produced in Lapland; but they are brought from other places, and particularly from Lithuania. . . . . . . They are found in South Finland, in Carelia, and in Ruſſia; *Hiſt. de la Lapponie, par Scheffer, p.* 310.

§ In the neighbourhood of Irkutzk, there are elks, ſtags, &c.; *Voyage de Gmelin, tom.* ii. *p.* 165.—The elks are common in the countries of the Manheous Tartars and of the Solons; *Id. ib.*

** The Tartarian animal called *Han-ta-han* by the Chineſe appears to be the ſame with the elk. ‘The han-ta-han,’ ſay the Miſſionaries, ‘is an animal which reſembles the elk. ‘The hunting of it is a common exerciſe in the country of ‘the Solons, and the Emperor Kamhi ſometimes partakes ‘of this amuſement. There are han-ta-hans as large as our ‘oxen. They are only found in particular cantons, eſpeci-‘ally toward the mountains of Sevelki, in marſhy grounds, ‘which they are fond of, and where they are eaſily hunted, ‘becauſe their weight retards their flight;’ *Hiſt. Gen. des Voyages, tom.* xvi. *p.* 602.

the *orignal*, and the rain-deer under that of *caribou*. Thoſe naturaliſts who ſuſpect that the orignal * is not the elk, and the caribou

* The *elks* or *orignals* are frequent in the province of Canada, and very rare in the country of the Hurons; becauſe theſe animals generally retire to the coldeſt regions. . . . . The Hurons call the elks *ſondareinta*, and the caribous *auſquoy*, of which the ſavages gave us a foot, which was hollow, and ſo light, that it is not difficult to believe what is ſaid of this animal, that he walks on the ſnow without making a track. The elk is taller than a horſe. . . . His hair is commonly gray, ſometimes yellow, and as long as a man's finger. His head is very long, and he has double horns like the ſtag. They are as broad as thoſe of the fallow deer, and three feet in length. His foot is cloven like that of the ſtag, but much larger. His fleſh is tender and delicate. He paſtures in the meadows, and likewiſe eats the tender twigs of trees. Next to fiſh, he is the principal food of the Canadians; *Voyage de Sagard Theodat. p.* 308.—There are elks in Virginia; *Hiſt. de la Virginie, p.* 213.—We find in New England great numbers of *orignals* or *elks*; *Deſcript. de l'Amerique Septent. par Denys, tom.* i. *p.* 27.—The iſland Cape Britain was famed for the chaſe of the orignal, where they were very numerous; but they have ſince been extirpated by the Savages; *Id. tom.* i. *p.* 163.—The orignal of New France is as ſtrong as a mule; his head is nearly of the ſame ſhape. His neck is longer, and his whole body more meager. His limbs are long and nervous. His foot is cloven, and his tail is very ſhort. Some of them are gray, others reddiſh or black, and, when old, their hair is hollow, as long as a man's finger, and makes excellent mattreſſes, or ornaments for ſaddles. The elk has large, flat, palmated horns. Some of them are a fathom long, and weigh from a hundred to a hundred and fifty pounds. They ſhed like thoſe of the ſtag; *Id. tom.* ii. *p.* 321. —The orignal is a ſpecies of elk, very little different from thoſe we ſee in Muſcovy. He is as large as a mule, and of a ſimilar figure, except in the muzzle, the tail, and the large flat horns, which, if we may credit the Savages, ſome-

 times

bou * the rain-deer, have not compared nature with the relations of travellers. Though ſmaller, like all the other American quadrupeds, than thoſe of the Old Continent, they are unqueſtionably the ſame animals.

We will acquire juſter ideas of the elk and rain-deer by comparing both with the ſtag: The elk

times weigh three hundred, and even four hundred pounds. This animal commonly frequents open countries. His hair is long, and of a brown colour. His ſkin, though not thick, is very ſtrong and hard. His fleſh is good, but that of the female is moſt delicate; *Voyage de la Hontan, tom.* i. *p.* 86.

* The caribou is an animal with a large muzzle and long ears.—As his foot is broad, he runs with eaſe over the hardened ſnow, which diſtinguiſhes him from the orignal, whoſe feet always ſink; *Voyage de la Hontan, tom.* i. *p.* 90.—The iſland of St. John is ſituated in the great bay of Saint Lawrence. There are no orignals in this iſland; but there are caribous, which ſeem to be another ſpecies of orignal. Their horns are not ſo ſtrong; their hair is thinner and longer, and almoſt entirely white. Their fleſh is whiter than that of the orignal, and makes excellent eating; *Deſcript de l'Amerique ſeptent. par Denys, tom.* i. *p.* 202.—The caribou is a kind of ſtag, which is very nimble and ſtrong; *Voyage de Dierville, p.* 125.—The caribou is not ſo tall as the orignal, and its figure partakes more of the aſs than of the mule, and equals the ſtag in fleetneſs. Some years ago, one of them was ſeen on Cape Diamond, above Quebec. . . . The tongue of this animal is much eſteemed. His native country ſeems to be in the neighbourhood of Hudſon's Bay; *Hiſt. de la Nouv. France, par le P. Charlevoix, tom.* iii. *p.* 129.—The fineſt hunting in North America is that of the caribou. It continues the whole year; and, particularly in ſpring and autumn, we ſee them in troops of above three or four hundred at a time. . . The horns of the caribou reſemble thoſe of the fallow deer. When firſt ſeen by our ſailors, they were afraid, and ran from them; *Lettres Edifiantes, recueil* x. *p.* 322.

is taller, thicker, and ſtands higher on his legs; his neck is alſo ſhorter, his hair longer, and his horns much longer than thoſe of the ſtag. The rain-deer is not ſo tall; his limbs * are ſhorter and thicker, and his feet much larger. His hair is very buſhy, and his horns are longer, and divided into a great number of branches †, each of which is terminated by a palm: But thoſe of the elk have the appearance of being cut off abruptly, and are furniſhed with broaches. Both have long hair under the neck, ſhort tails, and ears much longer than thoſe of the ſtag. Their

* The ſtag ſtands higher on his legs, but his body is ſmaller than that of the rain-deer; *Hiſt. de la Lapponie, par Scheffer, p.* 205.

† Many rain-deer have two horns, which bend backward, as thoſe of the ſtags generally do. From the middle of each a ſmall branch iſſues, which divides, like thoſe of the ſtag, into ſeveral antlers that ſtretch forward, and, by their figure and ſituation, might paſs for a third horn, though it frequently happens that the large horns puſh out ſimilar branches from their own trunks: Thus another ſmall branch advances toward the front, and then the animals ſeem to have four horns, two behind like the ſtag, and two before, which laſt is peculiar to the rain-deer. The horns of the rain-deer are alſo ſometimes diſpoſed in the following manner; two bend backward, two ſmaller ones mount upward, and two ſtill ſmaller bend forward, being all furniſhed with antlers, and having but one root. Thoſe which advance toward the front, as well as thoſe which mount upward, are, properly ſpeaking, only branches or ſhoots of the large horns which bend backward like thoſe of the ſtag. This appearance, however, is not very common; we more frequently ſee rain-deer with three horns, and the number of thoſe with four, as formerly deſcribed, is ſtill greater. All this applies only to the males; for the horns of the females are ſmaller, and have not ſo many branches; *Scheffer, p.* 306.

motion

motion confifts not of bounds or leaps, like the ftag and roebuck:. It is a kind of trot, but fo quick and nimble, that they will pafs over nearly the fame ground in an equal time, without being fatigued; for they will continue to trot in this manner during a whole day, or even two days *. The rain-deer keeps always on the mountains †; and the elk inhabits low grounds and moift forefts. Both go in flocks like the ftag; and both may be tamed; but the rain-deer is more eafily tamed than the elk. The latter, like the ftag, has never loft its liberty. But the rain-deer has been rendered domeftic by the moft ftupid of the human race. The Laplanders have no other cattle. In this frozen climate, which receives only the moft oblique rays of the fun, where the night and the day conftitute two feafons, where the earth is covered with fnow from the beginning of autumn to the end of fpring, where the bramble, the juniper, and the mofs, conftitute the only verdure of the fummer, man can never hope to nourifh cattle. The horfe, the ox, the fheep, and all our other ufeful animals, could never find fub-

* The orignal neither runs nor bounds; but his trot equals the courfe of the ftag. We are affured by the Savages, that he may be trotted three days and three nights without refting; *Voyage de la Hontan, tom*, i. *p*. 85.

† Rangifer habitat in Alpibus Europæ et Afiæ, maxime feptentrionalibus; victitat lichene rangifero. . . . . Alces habitat in borealibus Europæ Afiaque populetis; *Linn. Syft. Nat. p*. 67.

fiftence

ſiſtence there, nor be able to reſiſt the rigours of the froſt. It would have been neceſſary to ſelect from the deepeſt foreſts thoſe ſpecies of animals which are leaſt wild and moſt profitable. The Laplanders have actually done what we would be obliged to do, if all our cattle were deſtroyed. To ſupply their place, it would then be neceſſary to tame the ſtags and roebucks of our woods, and to render them domeſtic. This end, I am perſuaded, might be eaſily accompliſhed; and we ſhould ſoon derive as much benefit from theſe animals, as the Laplanders do from their rain-deer. This example ſhould lead us to admire the unbounded liberality of Nature. We uſe not one half of the treaſures ſhe preſents to us; for her reſources are inexhauſtible. She has given us the horſe, the ox, the ſheep, and other domeſtic animals, to ſerve, to nouriſh, and to clothe us; and ſhe has other ſpecies ſtill in reſerve, which might ſupply the want of the former: Theſe we have only to ſubdue, and to render them ſubſervient to our purpoſes. Man is equally ignorant of the powers of Nature, and of his own capacity to modify and improve her productions. Inſtead of making new reſearches, he is continually abuſing the little knowledge he has acquired.

By eſtimating the advantages the Laplanders derive from the rain-deer, we ſhall find that this animal is worth two or three of our domeſtic animals. They uſe him as a horſe in drawing

ſledges

ſledges and carriages. He is ſo nimble and expeditious, that in one day he performs with eaſe a journey of thirty leagues, and runs with equal ſureneſs on the frozen ſnows as upon the fineſt downs. The milk of the female affords a more ſubſtantial nouriſhment than that of the cow. The fleſh of this animal is exceedingly good. His hair makes excellent furs; and his ſkin is convertible into a very ſtrong and pliant leather. Thus the rain-deer alone furniſhes every article we derive from the horſe, the ox, and the ſheep.

The manner in which the Laplanders rear and manage the rain-deer, merits particular attention. Olaus *, Scheffer †, and Regnard ‡, have given intereſting details on this ſubject, of which the following is an abridgment. Theſe authors tell us, that the horns of the rain-deer are much larger, and divided into a greater number of branches, than thoſe of the ſtag. During winter the food of this animal is a white moſs, which he knows how to find under the deepeſt ſnow, by digging with his horns, and turning it aſide with his feet. In ſummer, he prefers the buds and leaves of trees to herbs, which the projecting branches of his horns permit him not to browſe with eaſe. He runs on the ſnow, into which the breadth of his feet prevents him from

* Hiſt. de Gentibus ſeptent. Autore Olao Magno, p. 205.

† Hiſtoire de la Lapponie, traduite du Latin de Jean Scheffer, p. 205.

‡ Oeuvres de Regnard, tom. i. p. 172.

ſinking.

ſinking. . . . . Theſe animals are extremely gentle, and are kept in flocks, which bring great profits to their owners. The milk, the ſkin, the ſinews, the bones, the hoofs, the horns, the hair, the fleſh, are all uſeful articles. The richeſt Laplanders have flocks of four or five hundred; and the pooreſt have ten or twelve. They are led out to paſture, and, during the night, they are ſhut up in incloſures, to protect them from the wolves. When carried to another climate, they ſoon die. Steno Prince of Sweden ſent ſome of them to Frederic Duke of Holſtein; and more recently, in the year 1533, Guſtavus King of Sweden tranſmitted to Pruſſia ten male and female rain-deer, which were let looſe in the woods. They all periſhed without producing, either in the domeſtic or free ſtate. 'I had a 'great deſire,' ſays M. Regnard, 'to carry ſome 'live rain-deer to France. This experiment 'has been frequently tried in vain. Laſt year, 'ſome of them were brought to Dantzick, 'where, being unable to endure the heat of that 'climate, they periſhed.'

In Lapland there are both wild and domeſtic rain-deer. During the rutting ſeaſon, the females are let looſe into the woods, where they meet with wild males; and, as the latter are ſtronger and more hardy than the domeſtic kind, the breed from this commixture is better adapted for drawing ſledges. Theſe rain-deer are not ſo mild as the others; for they ſometimes

not

not only refuse to obey their master, but turn against him, and strike him so furiously with their feet, that his only resource is to cover himself with his sledge, till the rage of the animal abates. This carriage is so light, that a Laplander can turn it with ease above himself. The bottom of it is covered with the skins of young rain-deer, the hair of which is turned backward, to make the sledge advance easily up the mountains, and prevent its recoiling. The rain-deer is yoked by means of a collar, made of a piece of skin with the hair on it, from which a trace is brought under the belly between the legs, and fixed to the fore part of the sledge. The only rein used by the Laplander is a cord tied to the root of the animal's horn, which he sometimes lays upon the one side of its back, and sometimes on the other, according as he wants it to turn to the right or the left. The rain-deer can travel, in this manner, at the rate of four or five leagues in an hour. But the quicker he goes, the motion becomes the more incommodious; and it requires much practice to be able to sit in the sledge, and to prevent it from overturning.

Externally, the rain-deer have many things in common with the stag; and the structure of their internal parts is nearly the same *. From this natural conformity, many analogous habits and similar effects result. Like the stag, the rain-deer annually casts his horns, and is loaded

* Vide Rangifer. anatom. Barth. Act. 1671. No. 135.

with

with fat. The rutting ſeaſon of both is about the end of September. The females of both ſpecies go eight months with young, and produce but one fawn. During the rutting ſeaſon, the males have an equal diſagreeable odour; and ſome of the female rain-deer, as well as the hinds, are barren *. The young rain-deer, like the fawns of the ſtag, are variouſly coloured, being firſt red mixed with yellow, and afterwards become of a blackiſh brown colour †. The young follow their mothers two or three years; and they acquire not their full growth till the end of the fourth year. It is at this age alſo that they are trained to labour. At the age of one year, they are caſtrated in order to make them tractable. The Laplanders perform this operation with their teeth. The uncaſtrated males are fierce, and very difficult to manage; and, therefore, are not uſed for labour. To draw their ſledges, the moſt active and nimble geldings are ſelected, and the heavieſt are employed in carrying proviſions and baggage. One unmutilated male is kept for every five or ſix females. Like the ſtags, they are tormented with worms in the bad ſeaſon. About the end of winter, ſuch vaſt numbers are engendered under

* Out of a hundred females, not above ten are barren, and, on account of their ſterility, are called *raones*. The fleſh of theſe is very fat and ſucculent in autumn; *Scheffer, p.* 204.

† The colour of their hair is blacker than that of the ſtag. . . . . The wild rain-deer are always ſtronger, larger, and blacker than the domeſtic kind; *Regnard, tom.* i. *p.* 108.

their

their ſkin, that it is as full of holes as a ſieve. Theſe holes made by the worms cloſe in ſummer; and it is only in autumn that the rain-deer are killed for their fur or their hide.

The flocks of rain-deer require much attention. They are apt to run off, and to aſſume their natural liberty. They muſt be followed, and narrowly watched, and never allowed to paſture but in open places. When the flock is numerous, the aſſiſtance of ſeveral perſons is neceſſary to keep them together, and to purſue thoſe which run off. In order to diſtinguiſh them, when they wander into the woods, or mingle with other flocks, they are all marked. In fine, the time of the Laplanders is totally conſumed in the management of their rain-deer, which conſtitute their whole riches, and they know how to derive all the conveniencies, or rather the neceſſities, of life from theſe animals. They are covered from head to foot with their furs, which is impenetrable either by cold or water. This is their winter habit. In ſummer, they uſe the ſkins from which the hair is fallen off. They likewiſe ſpin the hair, and cover the ſinews they extract from the animal's body with it. Theſe ſinews ſerve them for ropes and thread. They eat the fleſh, and drink the milk, of which laſt they alſo make very fat cheeſe. The milk, when churned, inſtead of butter, produces a kind of ſuet. This ſingularity, as well as the great extent of the horns, and the fatneſs of the

the animal at the commencement of the rutting ſeaſon, are ſtrong indications of a redundance of nouriſhment. But we have ſtill farther proofs that this redundance is exceſſive, or at leaſt greater than in any other ſpecies; for it is peculiar to the rain-deer alone, that the female has horns as well as the male, and that, even when the males are caſtrated, they annually ſhed and renew their horns*. In the ſtag, the fallow-deer, and the roebuck, who have undergone this operation, the horns remain always in the ſame condition they were at the time of caſtration. Thus, of all other animals, the rain-deer affords the moſt con-

* Uterque ſexus cornibus eſt.——— Caſtratus quotannis cornua deponit; *Linn. Syſt. Nat. p.* 93. It is upon the authority of Linnæus alone that I have advanced this fact, of which I am unwilling to doubt; becauſe, being a native of Sweden, and having travelled into Lapland, he had an opportunity of being well informed in every article regarding the rain-deer. I acknowledge, however, that the exception is ſingular, as, in all other animals of the deer-kind, caſtration prevents the renewal of the horns. Beſides, a poſitive teſtimony may be oppoſed to Linnæus. *Caſtratis rangiferis Lapones utuntur. Cornua caſtratorum non dicidunt, et cum hirſuta ſunt, ſemper pilis luxuriant*; Hulden, Rangifer. Jenæ 1697. But Hulden, perhaps, advances this fact from analogy only; and the authority of ſuch a ſkilful naturaliſt as Linnæus is of more weight than the teſtimonies of many people who are leſs informed. The known fact, that the female has horns like the male, is another exception which gives ſupport to the firſt; and it is ſtill farther ſupported by the practice among the Laplanders, of not cutting away the teſticles, but only compreſſing the ſeminal veſſels with their teeth; for, in this caſe, the action of the teſticles, which ſeems neceſſary to the production of horns, is not totally deſtroyed, but only weakened.

ſpicuous example of redundant nutritive matter; and this effect is perhaps leſs owing to the nature of the animal than to the quality of his food *; for the ſubſtance of the *lichen*, or rain-deer liverwort, which is its only nouriſhment, eſpecially during the winter, is ſimilar to that of the muſhroom, very nouriſhing, and contains a greater number of organic particles than the leaves or buds of trees †. This is the reaſon why the rain-deer has larger horns and a greater quantity of fat than the ſtag, and why the females and geldings are not deprived of horns: It is alſo the reaſon why the horns of the rain-deer are more diverſified in ſize, figure, and number of branches, than any other of the deer kind. Thoſe males who have never been hunted or reſtrained, and who feed plentifully, and at their eaſe, upon this ſubſtantial nouriſhment, have prodigious horns, which extend backward as far as their crupper, and forward beyond the muzzle. The horns of the caſtrated males, though ſmaller, often exceed thoſe of the ſtag; and thoſe of the females are ſtill ſmaller. Thus the

* See article *Stag*, vol. iv.

† It is remarkable that, though the rain-deer eats nothing during winter, but great quantities of this moſs, he always fattens better, his ſkin is cleaner, and his hair finer than when he feeds upon the beſt herbage, at which time he makes a hideous appearance. Their being unable to endure heat is the reaſon why they are better and fatter in autumn and winter, than in ſummer, when they have nothing but ſinews, ſkin, and bone; *Scheffer, Hiſt. de la Lapponie, p.* 206.

horns of the rain-deer are not only ſubject to variation from age, like others of the deer-kind, but from ſex and caſtration. Theſe differences are ſo great, in the horns of different individuals, that it is not ſurpriſing to ſee the deſcriptions given of them by authors ſo exceedingly different.

Another ſingularity, which is common to the rain-deer and the elk, muſt not be omitted. When theſe animals run, though not at full ſpeed, their hoofs *, at each movement, make a crackling noiſe as if all their limbs were diſjointed. The wolves, advertiſed by this noiſe, or by the odour of the animal, throw themſelves in his way, and, if numerous, they ſeize and kill him; for a rain-deer defends himſelf againſt the attacks of a ſingle wolf. For this purpoſe he employs not his horns, which are more hurtful than uſeful to him, but his fore-feet, which are very ſtrong. With theſe he ſtrikes the wolf

* Rangiferum culex pipiens, œſtrus tarandi, tabanus tarandi ad Alpes cogunt, crepitantibus ungulis; *Linn. Syſt. Nat. p.* 93. ——The feet of the rain-deer are ſhorter and much broader than thoſe of the ſtag, and reſemble the feet of the buffalo. The hoofs are cloven and almoſt round, like thoſe of the ox. Whether he runs or goes ſlowly, the joints of his limbs make a great noiſe, like flints falling on each other, or like the breaking of nuts. This noiſe is heard as far as the animal can been ſeen; *Scheffer, p.* 202.———Fragor ac ſtrepitus pedum ungularumque tantus eſt in celeri progreſſu, ac ſi ſilices vel nuces collidantur; qualem ſtrepitum articulorum etiam in alce obſervavi.———It is remarkable in the rain-deer, that all his bones, and particularly thoſe of his feet, make a crackling noiſe, which is ſo loud as to be heard as far as the animal can be ſeen; *Regnard, tom.* i. *p.* 108.

ſo violently as to ſtun him, or make him fly off; and afterwards runs with a rapidity that prevents all further attacks. The *roſomack* or *glutton*, though not ſo numerous, is a more dangerous enemy. This animal is ſtill more voracious, but not ſo nimble as the wolf. He purſues not the rain-deer, but lies in wait for it concealed in a tree. As ſoon as the rain-deer comes within his reach, he darts down upon it, fixes upon its back with his claws; and, tearing its head or neck with his teeth, he never quits his ſtation till he has cut the animal's throat. He employs the ſame artifices, and carries on the ſame war againſt the elk, which is ſtill ſtronger than the rain-deer *. This *roſomack* or *glutton* of the North is the ſame animal with the *carca-*

* There is another animal, of a grayiſh brown colour, and about the ſize of a dog, which carries on a bloody war againſt the rain-deer. This animal, which the Swedes call *jaert*, and the Latins *gulo*, conceals itſelf in the higheſt trees, in order to ſurpriſe its prey. When he diſcovers a rain-deer, whether wild or domeſtic, paſſing under the tree where he is watching, he darts down upon its back, and, fixing his claws in the neck and tail, he tears and ſtretches with ſuch violence as to break the animal's back, then ſinks his muzzle into its body, and drinks its blood. The ſkin of the jaert is very fine and beautiful, and has even been compared to that of the ſable; *Oeuvres de Regnard, tom.* i. *p.* 154.——The caribou runs upon the ſnow almoſt as nimbly as upon the ground; becauſe the broadneſs of its feet prevents it from ſinking. The caribou, like the orignal, travels through the foreſts in winter, and is attacked in the ſame manner by the carcajou; *Hiſt. de l'Acad. des Sciences, année* 1713, *p.* 14. *Note,* The carcajou is the ſame animal with the *jaert* or *glutton*.

jou

jou or *quincajou* of North America. His combats with the orignal of Canada are famous; and, as formerly remarked, the orignal of Canada is the ſame with the elk of Europe. It is remarkable, that this animal, which is not larger than a badger, ſhould kill the elk, which exceeds the ſize of a horſe, and is ſo ſtrong as to ſlay a wolf with a ſingle ſtroke of his foot *. But the fact is atteſted by ſuch a number of authorities as render it altogether unqueſtionable †.

The

* Lupi et ungulis et cornibus vel interimuntur vel effugantur ab alce; tanta enim vis eſt in ictu ungulæ, ut illico tractum lupum interimat aut fodiat, quod ſæpius in canibus robuſtiſſimis venatores experiuntur; *Olai Magni Hiſt. de Gent. Septent. p.* 135.

† Quieſcentes humi et erecti ſtantes onagri maximi a minima quandoque muſtela guttur inſiliente mordentur, ut ſanguine decurrente illico deficiant morituri. Adeo inſatiabilis eſt hæc beſtiola in cruore ſugendo, ut vix ſimilem ſuæ quantitatis habeat in omnibus creaturis; *Olai Magni Hiſt. de Gent. Sept. p.* 134. *Note,* 1. That Olaus, by the word *onager*, often means the *elk*; 2. That, with much impropriety, he compares the glutton to a ſmall weaſel; for this animal is larger than a badger.——The quincajou climbs trees, and, concealing himſelf among the branches, waits the approach of the orignal. When any of theſe animals come under the tree, the quincajou darts down upon its back, fixes his claws in its throat and rump, and then tears the creature's neck, a little below the ears, till it falls down; *Deſcript. de l'Amerique Septentrionale, par Denys, p.* 329.——The carcajou attacks and kills the orignal and caribou. In winter, the orignal frequents thoſe diſtricts where the *anagyris fœtida*, or ſtinking bean-trefoil, abounds; becauſe he feeds upon it; and, when the ground is covered with five or ſix feet of ſnow, he makes roads through theſe diſtricts, which he never abandons, unleſs when purſued by the hunters. The carcajou, obſerving the

route

The elk and the rain-deer are both ruminating animals, as appears from their manner of feeding, and the ſtructure of their inteſtines * ; yet Tornæus Scheffer †, Regnard ‡, Hulden §, and ſeveral other authors, have maintained that the rain-deer does not ruminate. Ray ||, with much propriety, conſiders this opinion as incredible; and, in fact, the rain-deer ** chews the cud as well as all other animals which have many ſtomachs. The duration of life, in the domeſtic rain-deer, exceeds not fifteen or ſixteen

route of the orignal, climbs a tree near a place where it muſt paſs, darts upon it, and cuts its throat in a moment. In vain the orignal lies down on the ground, or rubs himſelf againſt the trees; for nothing can make the carcajou quit his hold. The hunters have found pieces of his ſkin, as large as a man's hand, ſticking on the tree againſt which the orignal had daſhed him; *Hiſt. de l'Acad. des Sciences, année* 1707, *p.* 13.

* The elk, in its internal parts, and particularly in its bowels, and four ſtomachs, has a conſiderable reſemblance to the ox; *Mem. pour ſervir à l'Hiſtoire des Animaux, part.* i. *p.* 184.

† It is remarkable, that, though the rain-deer is cloven-footed, he does not ruminate; *Scheffer, p.* 200.

‡ Regnard makes the ſame obſervation, tom. i. p. 109.

§ Sunt biſulci et cornigeri, attamen non ruminant Rangiferi; *Hulden, Rangiferi, &c.*

|| Profecto (inquit Peyerus) mirum videtur animal illud tam inſigniter cornutum, ac præterea biſculum, cerviſque ſpecie ſimillimum, ruminatione deſtitui, ut dignum cenſeam argumentum altiore indagine curioſorum, quibus Renones fors ſubminiſtrat aut principum favor. *Hactenus Peyerus*; mihi certe non mirum tantum videtur, ſed plane incredibile; *Raii Synopſ. Quad. p.* 89.

** Rangifer ruminat æque ac aliæ ſpecies ſui generis; *Linn. Faun. Suecica, p.* 14.

years.

years *. But it is probable, that, in a wild ſtate, he lives much longer; for, as he is four years in acquiring his full growth, he ought, when in his natural ſtate, to live twenty-eight or thirty years. The Laplanders employ different methods of hunting the wild rain-deer, correſponding to the difference of ſeaſons. In the rutting time, they uſe domeſtic females to attract wild males †. They ſhoot theſe animals with muſkets or with bows, and they let fly their arrows with ſuch violence, that, notwithſtanding the great thickneſs and ſtrength of their ſkin, one is generally fatal.

We have collected the facts relating to the hiſtory of the rain-deer with the more care and

* Ætas ad tredecim vel ultra quindecim annos non excedit in domeſticis; *Hulden.* Ætas ſexdecim annorum; *Linn. Syſt. Nat. p.* 67.——Thoſe rain-deer which eſcape all misfortunes and diſeaſes, ſeldom live above thirteen years; *Scheffer, p.* 209.

† The Laplanders hunt the rain-deer with nets, halberds, arrows, and muſkets. The hunting ſeaſons are autumn and ſpring. In autumn, when the rain-deer are in ſeaſon, the Laplanders go to thoſe places of the foreſts which they know the wild males frequent, and there tie domeſtic females to the trees. The female attracts the male, and, when he is at the point of covering her, the hunter ſhoots him with a bullet or an arrow.——In ſpring, when the ſnow begins to melt, and theſe animals are embarraſſed by ſinking in it, the Laplander, ſhod with his rackets, purſues and overtakes them.——At other times, they are chaſed into ſnares by dogs. In fine, a kind of nets are employed, which are compoſed of ſtakes wattled together in the form of two hedges, with an alley between them of perhaps two leagues in length. When the rain-deer are puſhed into this alley, they run forward, and fall into a large ditch made with that view at the end of it; *Scheffer, p.* 209.

 circum-

circumſpection, becauſe it was not poſſible for us to procure the live animal. Having expreſſed my regret on this ſubject to ſome of my friends, Mr. Collinſon, member of the Royal Society of London, a man as reſpectable for his virtues as for his literary merit, was ſo obliging as to ſend me a drawing of the ſkeleton of a rain-deer; and I received from Canada a fœtus of a caribou. By means of theſe two, and of ſeveral horns which were tranſmitted to us from different places, we have been enabled to mark the general reſemblances and principal differences between the rain-deer and the ſtag.

With regard to the elk, I ſaw one alive about fifteen years ago. But, as it continued only a few days in Paris, I had not ſufficient time to have the drawing completed; and, therefore, I was obliged to content myſelf with examining the deſcription formerly given of this animal by the gentlemen of the Academy, and to be ſatisfied that it was exact, and perfectly conformable to nature.

'The elk,' ſays the digeſter of the Memoirs of the Academy *, 'is remarkable for the length 'of its hair, the largeneſs of its ears, the ſmall'neſs of its tail, and the form of its eye, the 'largeſt angle of which is much ſplit, as well 'as the mouth, which is much larger than that 'of the ox, the ſtag, or other cloven-footed

* Mem. pour ſervir à l'Hiſtoire des Animaux, part. i. p. 178.

'animals,

'animals. . . . . The elk which we diſſected 'was nearly of the ſize of a ſtag. The length 'of the body was five feet and a half from 'the end of the muzzle to the origin of the 'tail, which was only two inches long. Be-'ing a female, it had no horns; and its neck 'was only nine inches in length, and as much 'in breadth. The ears were nine inches long 'by four broad. . . The colour of the hair 'was not much different from that of the aſs, 'the gray colour of which ſometimes approaches 'to that of the camel. . . In other reſpects, 'this hair differed greatly from that of the aſs, 'which is ſhorter, and from that of the camel, 'which is much finer. The length of the hair 'was three inches, and equalled in thickneſs 'the coarſeſt hair of a horſe. This thickneſs 'diminiſhed gradually toward the extremity, 'which was very ſharp: It diminiſhed like-'wiſe toward the root, but ſuddenly became 'like the handle of a lancet. This handle was 'of a different colour from the reſt of the hair, 'being white and diaphanous, like the briſtles 'of a hog. . . The hair was as long as that 'of a bear, but ſtraighter, thicker, ſmoother, 'and all of the ſame kind. The upper lip was 'large and detached from the gums, but by no 'means ſo large as Solinus deſcribed it, nor as 'Pliny has repreſented the animal he calls '*machlis*. Theſe authors tell us, that this crea-'ture is obliged to go backward when he paſ-'tures, to prevent his lip from being entangled

'between his teeth. We remarked, in the dif-'fection, that Nature had provided againft this 'inconveniency by the largenefs and ftrength 'of the mufcles deftined to raife the upper lip. 'We likewife found the articulations of the legs 'clofely embraced by ligaments, the hardnefs 'and thicknefs of which might give rife to the 'opinion, that the *alce*, after lying down, was 'unable to raife himfelf. . . . . His feet were 'fimilar to thofe of the ftag; only they were 'larger, and had no other peculiarity. . . . . . 'We remarked, that the large angle of the eye 'was much more flit below than in the ftag, 'the fallow-deer, and the roebuck: It is fin-'gular, that this flit was not in the direction 'of the opening of the eye, but made an angle 'with the line which goes from the one corner 'of the eye to the other; the inferior lachrymal 'gland was an inch and a half long, by feven 'lines broad. . . . . . . In the brain we found 'a part whofe magnitude feemed to point out 'fome relation to the fenfe of fmelling, which, 'according to Paufanias, is more exquifite in the 'elk than in any other animal; for the olfac-'tory nerves, commonly called the *mammillary* '*proceffes*, were incomparably larger than in 'any other animal we ever diffected, being 'more than four lines in diameter. . . . . With 'regard to the lump of flefh which fome au-'thors have placed on his back, and others un-'der his chin, if they have not been deceived

'or

'or too credulous, it muſt be peculiar to the elks 'they mention.' We can add our teſtimony to that of the gentlemen of the Academy; for, in the female elk we had alive, there was no bunch either under the chin, or on the neck. Linnæus, however, as he lives in the country inhabited by elks, and ought to have a more complete knowlege of them than we can pretend to, mentions this bunch on the neck, and even makes it an eſſential character of the elk: *Alces, cervus cornibus acaulibus palmatis, caruncula gutturali; Linn. Syſt. Nat. p.* 92. There is no other method of reconciling the aſſertion of Linnæus with our negative evidence, but by ſuppoſing this bunch, *guttural caruncle,* to be peculiar to the male, which we have never ſeen. But, though this were the caſe, Linnæus ought not to have made it an eſſential character of the ſpecies, ſince it exiſts not in the female. This bunch may likewiſe be a diſeaſe, a kind of wen, common among the elks; for, in Geſner's * two figures of this animal, the firſt, which wants horns, has a large fleſhy bunch on the throat; and, in the ſecond, which repreſents a male with his horns, there is no bunch.

In general, the elk is much larger and ſtronger than the ſtag or rain-deer †. His hair is ſo rough,

* Geſner, Hiſt. Quad. p. 1. & 3.

† The elk exceeds the rain-deer in magnitude, being equal to the largeſt horſe. Beſides, the horns of the elk are much ſhorter, about two palms broad, and have very few branches. His

rough, and his ſkin ſo hard, that it is hardly penetrable by a muſket ball *. His limbs are extremely firm, and poſſeſs ſuch agility and ſtrength, that, with a ſingle blow of his fore-feet, he can ſlay a man, or a wolf, and even break a tree. He is hunted, however, by men and dogs, in the ſame manner as the ſtag. We are aſſured, that, when purſued, he often falls down ſuddenly †, without being either ſhot or wounded.

His feet, eſpecially thoſe before, are not round, but long, and he ſtrikes with them ſo furiouſly as to kill both men and dogs. Neither does he more reſemble the rain-deer in the form of his head, which is longer, and his lips are larger and pendulous. His colour is not ſo white as that of the rain-deer, but, over the whole body, it is an obſcure yellow, mixed with a cinereous gray. When he moves, he makes no noiſe with his joints, which is common to all rain-deer. In fine, whoever examines both animals, as I have often done, will remark ſo many differences, that he will have reaſon to be ſurpriſed how any man ſhould regard them as the ſame ſpecies; *Scheffer*, *p.* 310.

* Alces ungula ferit, quinquaginta milliaria de die percurrit, corium globum plumbeum fere eludit; *Linn. Syſt. Nat.* *p.* 93.

† We had not advanced a piſtol ſhot into the wood, when we deſcried an elk, which, when running before us, ſuddenly dropped down, without being ſo much as fired at. We aſked our guide and interpreter how the animal came to fall in this manner. He replied, that it was the falling ſickneſs, to which theſe animals are ſubject, and aſſigned that as the reaſon of their being called *ellends*, which ſignifies *miſerable*. . . . If this diſeaſe did not often bring them down, it would be difficult to ſeize them. The Norwegian gentleman killed this elk while it was under the influence of its diſeaſe. We purſued another two hours, and would never have taken him, if he had not, like the firſt, fallen down, after having killed three ſtrong dogs with his fore-feet. . . . This gentleman preſent-ed

wounded. From this circumſtance it has been preſumed that the animal is ſubject to the epilepſy; and from this preſumption (which is not well founded, ſince fear might produce the ſame effect) the abſurd concluſion has been drawn, that his hoofs have the power of curing, and even preventing, the falling ſickneſs. This groſs prejudice has been ſo generally diffuſed, that many people ſtill carry pieces of the elk's hoof in the collets of their rings.

As the northern parts of America are very thinly inhabited, all the animals, and particularly the elks, are more numerous there than in the North of Europe. The ſavages are not ignorant of the art of hunting and ſeizing the elks *. They ſometimes follow the tract of theſe animals for ſeveral days, and, by mere perſeverance and addreſs, accompliſh their purpoſe. Their mode of hunting in winter is particularly ſingular. 'They uſe,' ſays Denys, 'rackets, by means of which they 'walk on the ſnow without ſinking. . . The 'orignal does not make much way, becauſe he 'ſinks in the ſnow, which fatigues him. He

ed me with the left hind feet of the elks he had killed, and told me they were a ſovereign remedy againſt the falling ſickneſs. To which I anſwered, ſmiling, that, ſince this foot had ſo much virtue, I was ſurpriſed that the animal to which it belonged ſhould ever be afflicted with the diſeaſe. The gentleman likewiſe laughed, and ſaid that I was right; that he had ſeen it adminiſtered without effect to many people who were troubled with the epilepſy; and that he knew, as well as I did, that it was a vulgar error; *Voyage de la Martiniere, p.* 10.

* Deſcript. de l'Amerique, par Denys, tom. ii. p. 425.

'eats

'eats only the annual ſhoots of trees. Where 'the Savages find the wood eaten in this manner, they ſoon meet with the animals, which 'are never very diſtant, and are eaſily taken, 'becauſe they cannot run expeditiouſly. They 'throw darts at them, which conſiſt of large 'ſtaves, pointed with a bone, which pierces like 'a ſword. When there are many orignals in a 'flock, the Savages put them to flight. The 'orignals, in this caſe, march at one another's 'tails, and make a circle ſometimes of more 'than two leagues, and, by their frequent turning round, tread the ſnow ſo hard, that they 'no longer ſink in it. The Savages lie in ambuſcade, and kill the animals with darts as they 'paſs.' From comparing this relation with thoſe already quoted, it is apparent, that the American Savage and the orignal are exact copies of the European Laplander and the elk.

SUPPLEMENT.

Addition to the article Elk and Rain-deer, by Profeſſor Allamand.

M. De Buffon is of opinion, that the European elk is likewiſe found in North America under the appellation of *orignal.* If any difference exiſts, it conſiſts in magnitude only, which varies

ries in proportion to climate and food. It is not even aſcertained which of them are largeſt. M. de Buffon thinks that thoſe of Europe are larger than thoſe of America, becauſe all the animals of the New Continent are ſmaller than thoſe of the Old. Moſt voyagers, however, repreſent the orignal as exceeding the elk in magnitude. Mr. Dudley, who ſent an accurate deſcription of an orignal to the Royal Society, ſays, that the hunters killed one which was more than ten feet high *. This ſtature would be neceſſary to enable the animal to carry its enormous horns, which weigh one hundred and fifty, and, if we believe La Hontan, three or four hundred pounds.

The Duke of Richmond, who delights in collecting, for public utility, every thing that can contribute to improve the arts, or augment our knowledge of Nature, has a female orignal in one of his parks, which was conveyed to him by General Carlton, governour of Canada, in the year 1766. It was then only one year old, and it lived nine or ten months. Some time before it died, he cauſed an exact drawing of it to be made, which he obligingly ſent to me, and of which I have given an engraving as a ſupplement to M. de Buffon's work. As this female was very young, it exceeded not five feet in height. The colour of the upper part of the body was a deep brown, and that of the under part was brighter.

* Phil. Tranſ. ann. 1721. No. 368. p. 165.

I re-

I received from Canada the head of a female orignal which was more advanced in years. Its length, from the end of the muzzle to the ears, is two feet three inches. Its circumference at the ears is two feet eight inches, and, near the mouth, one foot ten inches. The ears are nine inches long. But, as this head is dried, theſe dimenſions muſt be ſmaller than when the animal was alive.

M. de Buffon is likewiſe of opinion, that the caribou of America is the rain-deer of Lapland; and the reaſons with which he ſupports this idea have much weight. I have given a figure of the rain-deer, which is wanting in the Paris edition. It is a copy of that which was publiſhed by Ridinger, a famous painter and engraver, who drew it from the life. I have likewiſe been obliged to the Duke of Richmond for a drawing of the American caribou. This animal was ſent to him from Canada, and it lived a long time in his park. His horns were only beginning to ſhoot when the figure was drawn; and it is the only true repreſentation we have of the animal. By comparing it with the rain-deer, there appears, at firſt ſight, to be a very conſiderable difference between the two figures; but the want of horns in the caribou greatly changes its aſpect.

Addition

Addition by the Count de Buffon.

I Here give an engraving of a rain-deer, drawn from a living female in the poſſeſſion of the Prince of Condé. It was ſent to him by the King of Sweden, along with two males, one of which died on the road, and the other lived only a ſhort time after its arrival in France. The female reſiſted the effects of the climate for a conſiderable time. She was of the ſize of a hind; but her legs were ſhorter, and her body thicker. Her horns, like thoſe of the male, were divided into antlers, ſome of which pointed forward, and others backward. But they were ſhorter than thoſe of the males. The following deſcription of this animal was communicated to me by M. de Sève:

'The length of the whole body, from the 'muzzle to the anus, in a ſuperficial line, is five 'feet one inch. The height of the withers is 'two feet eleven inches, and that of the crupper two feet eleven inches nine lines. The 'hair is thick and cloſe, like that of the ſtag, 'the ſhorteſt on the body being an inch and 'three lines in length. It is longer on the belly, 'very ſhort on the limbs, and very long about 'the fetlock. The colour of the hair which 'covers the body is a reddiſh brown, more or

'lefs deep in different parts, and fprinkled with 'a kind of yellowifh white. Upon part of the 'back, the thighs, the top of the head, and 'chanfrin, the hair is deeper coloured, efpeci-'ally above the eye-pits, which the rain-deer 'has as well as the ftag. The circumference 'of the eye is black. The muzzle is a deep 'brown, and the circumference of the noftrils 'is black. The point of the muzzle, as far as 'the noftrils, as well as the end of the under 'jaw, are of a bright white colour. The ear is 'covered above with thick white hair, approach-'ing to yellow, and mixed with brown. The 'infide of the ear is adorned with large white 'hairs. The neck and upper part of the body, 'as well as the large hairs which hang on the 'breaft below the neck, are of a yellowifh 'white colour. Upon the fides, above the 'belly, there is a large band, as in the gazelle. 'The limbs are flender in proportion to the 'body; and they, as well as the thighs, are of 'a deep brown, and of a dirty white colour on 'the infide. The ends of the hairs which cover 'the hoofs are likewife of a dirty white. 'The feet are cloven, like thofe of the ftag. 'The two fore-toes are broad and thin: The 'fmall ones behind are long, pretty thin, and 'flat on the infide. They are all extremely 'black.'

By the figure I have given, no judgment muft be formed of the length and thicknefs of the rain-

rain-deer's horns, ſome of which extend backward from the head as far as the crupper, and project forward in antlers of more than a foot long. The large foſſil horns found in different places, and particularly in Ireland, appear to have belonged to the rain-deer ſpecies. Mr. Colinſon informed me that he had ſeen ſome of theſe foſſil horns with an interval of ten feet between their extremities, and with brown antlers, like thoſe of the rain-deer.

It is to this ſpecies, therefore, and not to that of the elk, that the foſſil bones of the animal called *mouſe-deer* by the Britiſh are to be referred. We muſt acknowledge, however, that no rain-deer now exiſt of ſuch magnitude and ſtrength as to carry horns ſo long and maſſy as thoſe found in a foſſil ſtate in Ireland, as well as in ſeveral other parts of Europe, and even in North America*.

Beſides, I knew only one ſpecies of rain-deer, to which I referred the caribou of America, and the Greenland fallow-deer, deſcribed and engraven by Mr. Edwards: And it is not long ſince I was informed, that there were two ſpecies, or rather two varieties, the one much larger than the other. The rain-deer of which I have given a figure, is the ſmall kind, and probably the

* In North America, we find horns which muſt have belonged to an animal of a prodigious magnitude. Similar horns are found in Ireland. They are branched, &c.; *Voyage de P. Kalm, tom.* ii. *p.* 435.

ſame

ſame with the Greenland fallow-deer of Mr. Edwards.

Some travellers tell us, that the rain-deer is the fallow-deer of the North; that, in Greenland, it is wild; and that the largeſt of them exceed not the ſize of a two year old heifer *.

Pontoppidan aſſures us, that the rain-deer periſh in every part of the world, except the northern regions, where they are even obliged to inhabit the mountains. He is leſs to be credited when he tells us, that their horns are moveable; that the animal can turn them either forward or backward; and that, above the eye-lids, there is a ſmall aperture in the ſkin, through which he ſees, when the ſnow prevents him from opening his eyes. This laſt fact appears to be imaginary, and borrowed from a practice of the Laplanders, who cover their eyes with a piece of ſplit wood, to avoid the great ſplendour of the ſnow, which renders them blind in a few years, if this precaution is neglected †.

It is remarkable, that theſe animals, in all their movements, make a crackling noiſe: Independent of running, even when ſurpriſed or touched, this noiſe is heard. I have been aſſured that the ſame thing happens to the elk; but I cannot aſcertain the truth of this aſſertion.

* Hiſt. Gen. des Voyages, tom. xix. p. 37.

† Pontoppidan's Nat. Hiſt. of Norway.

Obſervations

Obſervations on the Rain-deer, by Profeſſor Camper of Groningen.

THE rain-deer ſent to me from Lapland by the way of Drontheim and Amſterdam, arrived at Groningen the 21ſt day of June 1771. It was very feeble, not only on account of the heat of the climate and the fatigue of the voyage, but chiefly from an ulcer between the ſecond ſtomach and the diaphragm, of which it died the next day. While it lived, it eat, with appetite, graſs, bread, and other things preſented to it, and likewiſe drank very copiouſly. It did not die for want of nouriſhment; for, upon diſſection, I found all its ſtomachs full. Its death was ſlow, and accompanied with convulſions.

It was a male of four years old. In all the bones of the ſkeleton, there were epiphyſes, which proves that it had not yet acquired its full growth, which happens not till five years of age. Hence this animal may live at leaſt twenty years.

The colour of the body was brown, mixed with black, yellow, and white. The hairs on the belly, and particularly on the flanks, were white, and brown at the points, as in other deer. The hair on the limbs was a deep yellow; and that on the head inclined to black. The hair on the flanks, as well as on the neck and breaſt, was long and buſhy.

The hair which covered the body was ſo brittle, that, when ſlightly pulled, it broke tranſverſely. It lay in an undulated form, and its ſubſtance reſembled the pith of ruſhes. The brittle part of it was white. The hair on the head and the under part of the legs, as far as the hoofs, had not this fragility, but, on the contrary, was as ſtrong as that of a cow.

The coronet of the hoofs was covered on all ſides with very long hair. Between the toes of the hind-feet there was a broad pellicle, compoſed of the ſkin which covers the body, but interſperſed with ſmall glands.

In the hind-feet, at the height of the coronets, a kind of canal, ſufficient to admit a gooſe quill, and filled with very long hairs, penetrated as far as the articulation of the canon with the ſmall bones of the toes. I diſcovered no ſuch canal in the fore-feet; neither do I know the uſe of it.

The figure of this animal differed much from that deſcribed by other authors, becauſe it was extremely emaciated. The length of the body, from the muzzle to the anus, was five feet, and its height before three feet.

The eyes differ not from thoſe of the fallow-deer or ſtag. The pupil is tranſverſe; and the iris is brown, inclining to black. The eye-pits reſemble thoſe of the ſtag, and are filled with a whitiſh, reſinous, and ſomewhat tranſparent matter. As in the fallow-deer, there are two lachrymal ducts and canals. The upper eye-lid

lid has very long black *cilia*. It is not perforated, as ſome authors have fancied, but entire. The Biſhop of Pontoppidan, and, upon his authority, Mr. Haller, have attempted to account for this ſuppoſed perforation: They thought it neceſſary, in a country perpetually covered with ſnow, to defend the animal's eyes againſt the exceſſive glare of reflected light. Man, who is deſtined to live in all climates, prevents blindneſs as much as poſſible by veils or ſmall perforated machines, which weaken the ſplendour of the light. The rain-deer, who is made for this climate alone, has no occaſion for ſuch mechaniſm. But he is furniſhed with a nictitating membrane, or an internal eye-lid, like the birds, and ſome other quadrupeds. Neither is this membrane perforated: It is capable of covering the whole cornea.

The noſe of the rain-deer is very large, like that of the cow; and the muzzle is more or leſs flat, and covered with long grayiſh hair, which extends to the internal part of the noſtril. The lips are likewiſe covered with hair, except a ſmall border, which is blackiſh, hard, and very porous. The noſtrils are very diſtant from each other. The under lip is narrow, and the mouth deep cut, as in the ſheep.

He has eight cutting teeth in the under jaw; but they are very ſmall, and looſely fixed. Like the other ruminating animals, he has no cutting teeth in the upper jaw. But I thought I per-

ceived tuſks, though they had not yet pierced the gums; and I obſerved no ſuch appearance in the under jaw. Horſes have tuſks in both jaws; but mares ſeldom have any. The fallow-deer, both males and females, ſeldom or never have tuſks. But I lately procured the head of a hind recently brought forth, which had a large tuſk in the left ſide of the upper jaw: Nature is ſo various in this article, that no conſtant rule can be eſtabliſhed. There are ſix grinders in each ſide of both jaws, or twenty-four in all.

I have nothing to remark concerning the horns; for they were only beginning to ſhoot: One of them was an inch, and the other an inch and a half high. Their baſe was ſituated nearer the occiput than the orbit of the eye. The hair which covered them was beautifully turned, and of a gray colour, inclining to black. In viewing the two ſhoots at a diſtance, they had the appearance of two large mice ſitting on the animal's head.

The neck is ſhort, and more arched than that of the ſheep, but leſs than that of the camel. The body ſeemed to be naturally robuſt. The back is a little elevated toward the ſhoulders, and pretty ſtraight every where elſe, though the vertebræ are ſomewhat arched.

The tail is very ſmall, bent downward, and garniſhed with long buſhy hair.

The teſticles are very ſmall, and appear not without the body. The penis is not large

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The prepuce is naked, like a navel, full of wrinkles in the inſide, and covered with a calcareous cruſt.

The hoofs are large, long, and convex on the outſide. The ſpurs are alſo very long, and ſome of them touch the ground when the animal ſtands. They were hollow, probably becauſe he makes no uſe of them.

The inteſtines were exactly ſimilar to thoſe of the fallow-deer. There was no gall-bladder. The kidneys were ſmooth, and undivided. The lungs and wind-pipe were very large.

The heart was of a middle ſize, and, like that of the fallow-deer, contained one ſmall bone only. This bone ſupported the baſe of the ſemilunar valve of the aorta, which is oppoſed to two others, from which the coronary arteries of the heart derive their origin. It likewiſe gives firmneſs to the membranous partition between the two cavities of the heart, and to the triglochine valve of the right ventricle.

In this animal there is a ſingular pouch, very large, membranous, and ſituated under the ſkin of the neck. It begins by a conical canal between the os hyoides and the thyroide cartilage. This canal gradually enlarges, and is changed into a kind of membranous ſac, ſupported by two oblong muſcles, which derive their origin from the inferior part of the os hyoides, preciſely where the baſe, the piſiform bone, and the cornua unite.

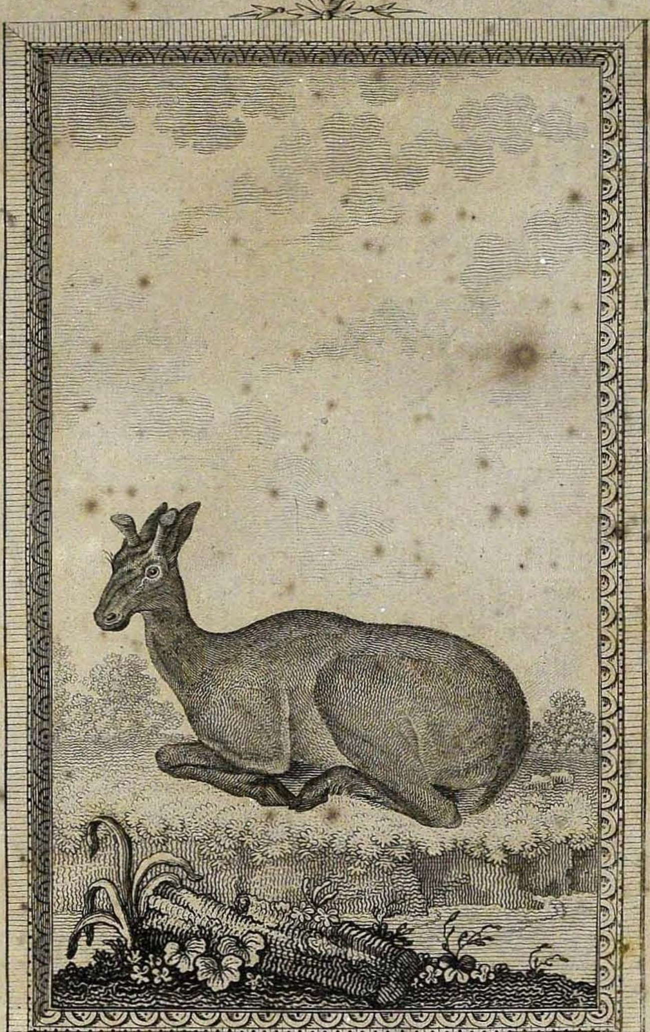
This

This pouch opens into the larynx, under the root of the epiglottis, by a large orifice, which eafily admitted my finger.

When the animal pufhed the air forcibly out of the lungs, as in lowing, the air paffed into this pouch, fwelled it, and neceffarily produced a confiderable tumour, which greatly changed the found. The two mufcles drive the air out of the pouch, when the animal ceafes its lowing.

About twenty years ago, I fhowed a fimilar pouch in feveral baboons and monkeys; and, the year following, I demonftrated to my pupils, that there was a double pouch in the Ourang-outang.

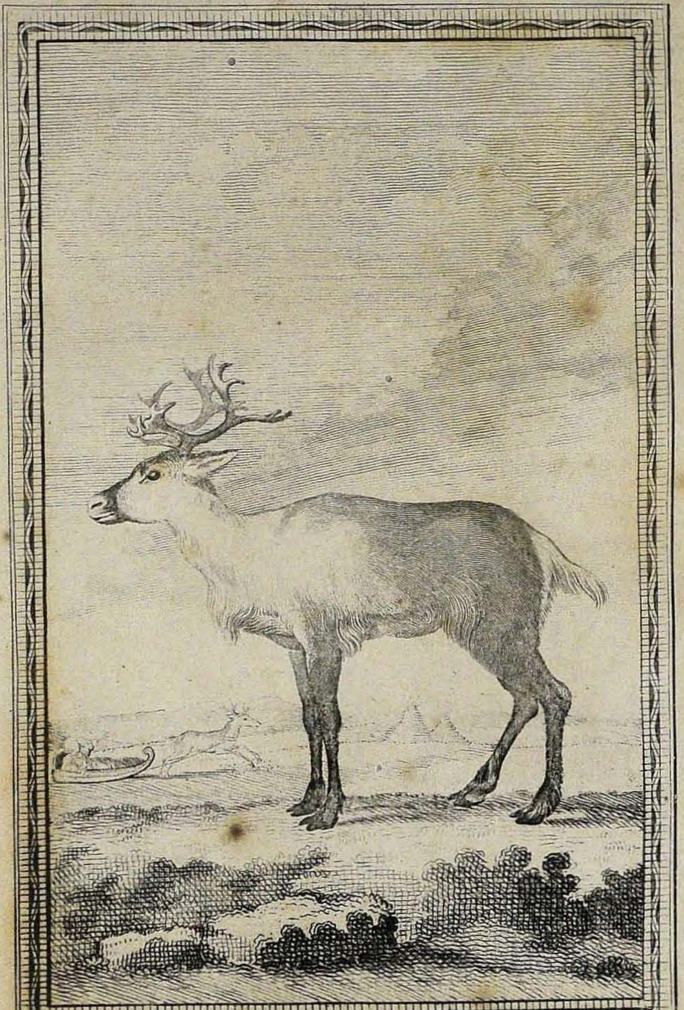
Plate CLXXXVIII.



A. Bell Sculp.

ELK.

Plate CLXXXIX.



A Bell Sculp.

FEMALE RAIN-DEER.

[library stamp]

The WILD GOAT*, the CHAMOIS GOAT †, and other GOATS.

THE Greeks, it is probable, were acquainted with the wild and chamois goats. But they have neither pointed out these animals by particular denominations, nor by characters so precise,

* The wild goat has large knotted horns, reclining backward, and a very small head. On the chin of the male there is a dusky beard: the rest of the hair is tawny, mixed with ash colour. The females are less, and have smaller horns, more like those of the common she-goat, and have few knobs on the upper surface. They bring one young, seldom two, at a time; *Pennant's Synops. of Quad. p.* 13.

In French, *Bouquetin, Bouc estain, Boucstein*; that is, *rock-goat, Stein* denoting *rock* in the Teutonic language; in Latin, *Ibex*; in German and Swiss, *Steinbock*.

Ibex, *Plinii, lib.* viii. *cap.* 53. *Gesner. Quad. p.* 303. *Raii Synops. Quad. p.* 77. *Brisson, Quad. p.* 39.

Bouc estain; *Belon, Obs. p.* 14.

Bouc Savage; *Gaston de Foix, p.* 99.

Capricorne; *Munster, Cosmog. p.* 381.

Steinbock; *Kram. Aust. p.* 321.

Capra Ibex, cornibus supra nodosis, in dorsum reclinatis, gula barbata; *Linn. Syst. Nat. p.* 95. *Klein. Quad. p.* 16.

† The chamois goat has slender, black, upright horns, hooked at the end. Behind each ear there is a large orifice in the skin. The forehead is white, and along the cheeks there is a dusky bar. The rest of the body is of a deep brown colour. The tail is short; the hoofs are long and much divided; *Pennant's Synops. of Quad. p.* 17.

In Latin, *Rupicapra*; in Italian, *Camuza*; in German, *Gemss*; in old French, *Ysard, Ysarius, Sarris*.

Chamois,

precise, as to enable us to distinguish them. They have denominated them in general, *wild goats* *. They perhaps regarded these animals as of the same species with the domestic kind †, having never bestowed on them proper names, as they have done to every other species of quadruped. Our modern naturalists, on the contrary, have considered the wild and the chamois goats as two distinct species, and both different from the common goat. There are facts and arguments in favour of both opinions, of which we shall only give a detail, till we learn from experience whether these animals can intermix together, and produce fertile individuals; as this circumstance alone can determine the question.

Chamois, Cemas, Ysard; Obs. de Belon. p. 54. Belon pretends that the French name *Chamois* comes from the Greek *Cemas* of Ælian; but he is not certain that *Cemas*, or rather *Kemas*, denoted the Chamois; see *Mem. pour servir à l'Hist. des Animaux, part.* i. *p.* 205.

Rupicapra; *Plinii, lib.* viii. *c.* 15. *Gesner, Quad. p.* 290. *Raii Synops. Quad. p.* 78. *Scheut. It. Alp. tom.* i. *p.* 155.

Ysarus ou Sarris; *Gaston de Foix, p.* 99. *Brisson. Quad. p.* 41.

Gemse; *Klein, Quad. p.* 18.

Antilope rupicapra; *Pallas Miscel. p.* 4.

Capra rupicapra, cornibus erectis uncinatis; *Linn. Syst. Nat. p.* 95.

* Rupicapras inter capras sylvestres adnumerare libet, quoniam hoc nomen apud solum Plinium legimus, et apud Græcos simpliciter *feræ capræ* dicuntur, ut conjicio: Nam et magnitudine et figura tum cornuum tum figura corporis ad villaticas proxime accedunt; *Gesner. Hist. Quad. p.* 292.

† Capræ quas alimus a capris feris sunt ortæ a queis propter Italiam, Capraria insula est nominata. *Varro.*

The male wild goat differs from the chamois in the length, thicknefs, and figure of his horns. His body is alfo larger, and he is more vigorous and ftrong. The horns of the female wild goat are fmaller than thofe of the male, and have a great refemblance to thofe of the chamois *. Befides, the manners and difpofitions of thefe two animals are the fame, and they inhabit the fame climate; only the wild goat, being ftronger and more agile, goes to the fummits of the higheft mountains, while the chamois never rifes higher than the fecond ftage †. But neither of them are found in the plains. Both of them clear roads in the fnow, and leap from one precipice to another. Both are covered with a firm folid fkin, and clothed, in winter, with a double fur, the external hair being coarfe, and the internal finer and more bufhy ‡. Both of them have a black band on the back, and tails of nearly

* Fœmina in hoc genere mare fuo minor eft, minufque fufca, major Capra villatica, Rupicapræ non adeo diffimilis: Cornua ei parva, et ea quoque Rupicapræ aut vulgaris capræ cornibus fere fimilia; *Stumpfius, apud Gefner, p.* 305.

† Rupes montium colunt Rupicapræ, non fummas tamen ut Ibex, neque tam alte et longe faliunt; defcendunt alquando ad inferiora Alpium juga; *Gefner, Hift. p.* 292.

‡ The chamois goat has longer legs than the domeftic kind; but his hair is fhorter. That which covers the belly and thighs is the longeft, and exceeds not four inches and a half. On the back and flanks the hair is of two kinds; for, as in the beaver, befide the long external hair, there is a very fhort fine hair, concealed round the roots of the longer kind. The head, the belly, and the legs, were covered with coarfe hair only; *Mem. pour fervir a l'Hift. des Animaux, part.* i. *p.* 203.

an equal ſize. The number of external reſemblances is ſo great, and the conformity of the internal parts is ſo complete, that we ſhould be induced to conclude, that theſe two animals are not only ſimple, but permanent varieties of the ſame ſpecies. Beſides, the wild, as well as the chamois goats*, when taken young, and reared along with the domeſtic kind, are eaſily tamed, aſſume the ſame manners, go in flocks, return to the ſame fold, and probably couple and produce together. I acknowledge, however, that this laſt fact, which is the moſt important of all, and would alone decide the queſtion, is by no means eſtabliſhed. We have never been able, with certainty, to learn whether the wild and chamois goats produce with the common kind†. We only ſuſpect this to be the caſe. In this reſpect, we agree with the ancients; and, beſides, our conjecture

* The inhabitants of the iſland of Crete might take the young of the bouc-eſtain (of which there are great numbers) wande ıg in the mountains, and feed and tame them along with the domeſtic kind. . . . They are covered with yellow hair. When old, they become gray, and a black line runs along the ſpine of the back. We have ſome of them in the mountains of France, and chiefly in places full of precipices, and of difficult acceſs. . . . The bouc-eſtain leaps from one rock to another, at the diſtance of ſix fathoms. An exertion almoſt incredible to thoſe who have not ſeen it; *Obſerv. de Belon, p.* 14.—Audio Rupicapras aliquando cicurari; *Geſner, de Quad. p.* 292.—Vaſleſii ibicem in prima ætate captam omnino cicurari, et cum villaticis capris ad paſcua ire et redire, aiunt; progreſſu tamen ætatis ferum ingenium non prorſus exuere; *Stumpſius apud Geſner. Hiſt. Quad. p.* 305.

† In the compilation of natural hiſtory made by Meſſ. Arnault de Nobleville and Salerne, it is ſaid (tom. iv. p. 264.), that

conjecture ſeems to be founded on ſtrong analogies, which are ſeldom contradicted by experience.

Let us, however, conſider the oppoſite arguments. The wild and chamois goats both ſubſiſt in the ſtate of nature, and yet they always remain diſtinct. The chamois ſometimes mingles ſpontaneouſly with the flocks of the domeſtic kind *; but the wild goat never aſſociates with them, unleſs when tamed. The male wild goat and the common he-goat have very long beards, and the chamois has none. The horns of the male and female chamois are ſmall: Thoſe of the wild he-goat are ſo large and ſo long †, that we

that the chamois goats are in ſeaſon during almoſt the whole month of September; that the female goes with young nine months; and that they generally bring forth in June. If theſe facts were true, they would demonſtrate that the chamois is not the ſame ſpecies with the goat, which goes with young about ſix months only: But I think they are ſuſpicious, if not falſe. The hunters, as appears from the paſſages already quoted, aſſure us, on the contrary, that the chamois and wild goats do not come in ſeaſon till the month of November; and that the females bring forth in May. Thus the time of geſtation, inſtead of being extended to nine months, ſhould be reduced to near five, as in the domeſtic goat. But this matter muſt be decided by experience alone.

* Rupicapræ aliquando accedunt uſque ad greges caprarum cicurum quos non refugiunt, quod non faciunt ibices; *Geſner. Hiſt. Quad. p.* 292.

† Ibex egregium ut et corpulentum animal, ſpecies fere cervina minus tamen, cruribus quidem gracilibus et capite parvo cervum exprimit. Pulchros et ſplendidos oculos habet. Color pellis fuſcus eſt. Ungulæ biſulcæ et acutæ ut in rupicapris; cornua magni ponderis ei reclinantur ad dorſum, aſpera et nodoſa, eoque magis quo grandior ætas proceſſerit; augentur

we could hardly imagine they belonged to an animal of his ſize. The chamois ſeems to differ from the wild goat, and the common he-goat, by the direction of his horns, which incline a little forward in their inferior part, and bend backward at the point like a hook. But, as we remarked in the hiſtory of the ox and ſheep, the horns of domeſtic animals, as well as thoſe of wild animals living in different climates, vary prodigiouſly. The horns of our female goat are not entirely ſimilar to thoſe of the male. The horns of the male wild goat are not very different from thoſe of our he-goat: And, as the female wild goat approaches the domeſtic kind, and even the chamois, in ſize, and in the ſmallneſs of its horns, may we not conclude, that the males of the wild, chamois, and domeſtic goats, are only one ſpecies of animal, in which the nature of the females is conſtant and ſimilar among themſelves, but that the males are ſubject to conſiderable variations? In this point of view, which is not, perhaps, removed ſo far from nature as may be imagined, the wild goat would be the original male ſtock, and the chamois would be the female *. I ſay, that this point of

augentur enim quotannis donec jam vetulis tandem nodi circiter viginti increverint. Bina cornua ultimi incrementi ad pondus ſedecim aut octodecim librarum accedunt. . . . Ibex ſaliendo rupicapram longe ſuperat; hoc tantum valet ut niſi qui viderit vix credat; *Stumpfius apud Geſner, p.* 305.

* The want of a beard in the chamois is a female character, which ought to be added to the others. The male chamoi;

of view is not imaginary, ſince we can prove from experience, that there are animals in nature, in which the female can equally ſerve males of different ſpecies, and produce from them both. The ſheep produces with the he-goat as well as with the ram, and always brings forth lambs which are individuals of its own ſpecies. The ram, on the contrary, produces not with the ſhe-goat. The ſheep, therefore, may be regarded as a female common to two different males; and, conſequently, ſhe conſtitutes a ſpecies independent of the male. The ſame thing will happen to the wild goat. The female alone repreſents the primitive ſpecies, becauſe her nature is conſtant. The males, on the contrary, vary; and it is extremely probable, that the domeſtic ſhe-goat, which may be conſidered as the ſame female as thoſe of the wild and chamois kinds, would produce equally with theſe three different males, which alone admit of varieties in ſpecies; and, conſequently, though they ſeem to change the unity, alter not the identity of the ſpecies.

Theſe, as well as all other poſſible relations, muſt neceſſarily exiſt in nature. It even appears, that the females contribute more to the ſupport of the ſpecies than the males; for,

mois appears, as well as the female, to participate of the feminine qualities of the ſhe-goat. Thus it may be preſumed, that the domeſtic he-goat would engender with the female chamois; and that, on the contrary, the male chamois could not engender with the female domeſtic goat. Time will verify or deſtroy this conjecture.

though both concur in the firſt formation of the fœtus, the female, who afterwards furniſhes every thing neceſſary to its growth and nutrition, modifies and aſſimilates it more to her own nature, and muſt, therefore, greatly efface the impreſſion of the parts derived from the male. Thus, if we want to form a diſtinct judgment of a ſpecies, we ought to examine the females. The male beſtows one half of the animated ſubſtance: The female gives an equal portion, and furniſhes, beſides, all the matter neceſſary for the developement of the form. A beautiful woman ſeldom fails to produce beautiful children. The offspring of a beautiful man with an ugly woman are generally ſtill more ugly.

Hence, even in the ſame ſpecies, there may ſometimes be two races, the one maſculine and the other feminine, which, by both ſubſiſting and perpetuating their diſtinctive characters, appear to conſtitute two different ſpecies; and this ſeems to be the caſe, when it is almoſt impoſſible to fix the limits between what naturaliſts term *ſpecies* and *variety*. Let us ſuppoſe, for example, that ſome ſheep were always ſerved with he-goats, and others with rams; after a certain number of generations, a race would be eſtabliſhed among the ſpecies of ſheep, which would partake greatly of the nature of the goat, and would afterwards perpetuate its own kind; for, though the firſt produce of the he-goat would be little removed from the mother's ſpecies, and

would be a lamb, and not a kid; yet this lamb is already covered with hair, and poſſeſſes ſome other characters of the father. Let theſe ſeveral mongrels be afterwards ſerved with a he-goat; the produce in this ſecond generation will make a nearer approach to the ſpecies of the father, and ſtill nearer in the third, &c. In this manner, the foreign characters will ſoon overbalance the natural ones; and this fictitious race might ſupport itſelf, and form a variety in the ſpecies, the origin of which it would be difficult to trace. Now, what might ariſe from the influence of one ſpecies on another, may be produced with greater eaſe in the ſame ſpecies. If vigorous females be conſtantly ſerved with feeble males, in proceſs of time a feminine race will be eſtabliſhed; and, if very ſtrong males are appropriated to females of inferior ſtrength and vigour, a maſculine race will be the reſult, ſo different in appearance from the firſt, that we could not aſſign to them a common origin, and, of courſe, would regard them as two diſtinct ſpecies.

To theſe general reflections, we ſhall add ſome particular facts. We are aſſured by Linnæus *, that

* Capra cornibus depreſſis, incurvis, minimis, cranio incumbentibus, gula barbata. Magnitudo hædi hirci: Pili longi, penduli; cornua lunata, craſſa, vix digitum longa, cranio adpreſſa ut fere cutem perforent: Habitat in America. Linnæus, I ſuſpect, has not been properly informed with regard to the country of this animal, and I believe it to be a native of Africa. My reaſons are, 1. That no author mentions this

 ſpecies

that he ſaw in Holland two animals of the goat-kind, of which the one had very ſhort, thick horns, lying almoſt flat on the ſkull; the horns of the other were erect, and bended backward at the points, and its hair was ſhort. Theſe animals, though they ſeemed to be more remote in ſpecies than the chamois and common goat, failed not to produce together; which demonſtrates that theſe differences in the figure of the horns, and length of the hair, are not eſſential and ſpecific characters; for, as the animals produced together, they muſt be regarded as belonging to the ſame ſpecies. From this example, it may be concluded, that the chamois and our goat, whoſe principal differences lie in the form of the horns and the length of the hair, are probably the ſame ſpecies.

In the royal cabinet, there is the ſkeleton of

ſpecies of goat, nor even the common goat, as being ever found in America; 2. That all travellers, on the contrary, agree in aſſuring us, that there are three kinds of goats in Africa, a large, a middle, and a ſmall kind; 3. That we have ſeen an animal, which we received under the name of the *African Buck*, and of which we have given a figure, that reſembled ſo much Linnæus's deſcription of the *capra cornibus depreſſis*, &c. that we conſidered it to be the very ſame animal. For theſe reaſons, we are entitled to affirm, that this ſmall goat is an original native of Africa, and not of America.

Capra cornibus erectis, apice recurvis. Magnitudo hædi hirci unius anni. Pili breves, cervini. Cornua vix digitum longa, antrorſum recurvata apice: Hæc cum præcedenti coibat, et pullum non diu ſuperſtitem in vivario Cliffortiano producebat. Facies utriuſque adeo aliena, ut vix ſpeciem eandem at diverſiſſimam, argueret; *Linn. Syſt. Nat. p.* 96.

an

an animal, which was ſent under the name of *capricorne*. In the form of the body and proportions of the bones, it has a perfect reſemblance to the domeſtic he-goat; and the figure of the under jaw, is the ſame with that of the wild goat. But it differs from both in the horns: Thoſe of the wild goat have prominent tubercles or knobs, and two longitudinal ridges, between which there is a well marked anterior face: Thoſe of the common he-goat have but one ridge, and no tubercles. The horns of the capricorne have but one ridge, and no anterior face: Though they want tubercles, they have rugoſities which are larger than thoſe of the he-goat. Theſe differences ſeem to indicate an intermediate race between the wild and the domeſtic goat. Beſides, the horns of the capricorne are ſhort and crooked at the point, like thoſe of the chamois; and, at the ſame time, they are compreſſed and have rings: Hence they partake at once of the he-goat, the wild goat, and the chamois goat.

Mr. Brown *, in his Hiſtory of Jamaica, informs

* Capra I. cornibus carinatis arcuatis; *Linn. Syſt. Nat.* The nanny goat.

Capra II. cornibus erectis uncinatis, pedibus longioribus.

Capra cornibus erectis uncinatis; *Linn. Syſt. Nat.* The rupi goat. . . . .

Neither of theſe are natives of Jamaica; but the latter is often imported thither from the Main and Rubee iſland; and the other from many parts of Europe. The milk of theſe animals is very pleaſant in all thoſe warm countries for it loſes

that

forms us, that there are in that iſland, 1. the common domeſtic goat of Europe; 2. the chamois; 3. the wild goat. He aſſures us, that none of theſe animals are natives of America, but have been tranſported from Europe; that, like the ſheep, they have degenerated and become ſmaller in this new country; that the wool of the ſheep is changed into hair as coarſe as that of the goat; that the wild goat ſeems to be a baſtard race, &c. Hence we are led to believe, that the ſmall goat, with erect horns, and crooked at the points, which Linnæus ſaw in Holland, and was ſaid to have come from America, is the chamois of Jamaica, that is, the European chamois degenerated and diminiſhed by the climate of America; and that the wild goat of Jamaica, called the *baſtard wild goat*

that rancid taſte which it naturally has in Europe. A kid is generally thought as good, if not better, than a lamb, and is frequently ſerved up at the tables of all ranks.

Capra III. cornibus nodoſis in dorſum reclinatis; *Linn. Syſt. Nat.* . . . . The baſtard ibex.

This ſpecies ſeems to be a baſtard ſort of the ibex goat; it is the moſt common kind in Jamaica, and eſteemed the beſt by moſt people. It was firſt introduced there by the Spaniards, and ſeems now naturalized in theſe parts.

Ovis I. cornibus compreſſis lunatis; *Linn. Syſt. Nat.* The ſheep. Theſe animals have doubtleſs been bred in Jamaica ever ſince the time of the Spaniards, and thrive well in every quarter of the iſland; but they are generally very ſmall. A ſheep carried from a cold climate to any of thoſe ſultry regions, ſoon alters its appearance; for, in an year or two, inſtead of wool, it acquires a coat of hair like a goat. *The Civil and Natural Hiſtory of Jamaica, by Patrick Brown, M. D. chap. v. ſect. iv.*

by

by Mr. Brown, is our capricorne, which ſeems to be nothing elſe than the wild goat degenerated by the influence of climate.

M. Daubenton, after ſcrupulouſly examining the relations of the chamois to the he-goat and ram, ſays, in general, that it has a greater reſemblance to the he-goat than to the ram. Next to the horns, the chief differences are found in the figure and ſize of the front, which is leſs elevated and ſhorter, and the form of the noſe, which is more contracted in the chamois than in the he-goat; ſo that, in theſe two articles, the chamois reſembles the ram more than the he-goat. But, by ſuppoſing, what is extremely probable, that the chamois is a conſtant variety of the ſpecies of the he-goat, as the bull-dog and grey-hound are conſtant varieties in the dog-kind, we will perceive that theſe differences in the ſize of the front and the poſition of the noſe, are not nearly ſo great in the chamois, when compared with the he-goat, as in the bull-dog and grey-hound, which, however, produce together, and certainly belong to the ſame ſpecies. Beſides, as the chamois reſembles the he-goat in a greater number of characters than the ram, if he conſtituted a particular ſpecies, it muſt neceſſarily be an intermediate one between the he-goat and the ram. Now, we have ſeen, that the he-goat and ewe produce together: The chamois, therefore, which is an intermediate ſpecies between the two, and, at the ſame time,

 has

has a greater number of reſemblances to the he-goat than to the ram, ought to produce with the ſhe-goat, and, conſequently, ſhould be regarded as only a conſtant variety of this ſpecies.

Hence, as the chamois was tranſported into America, where it has become ſmaller, and produces with the ſmall ſhe-goat of Africa, it is more than probable that he would alſo produce with our ſhe-goats. The chamois, therefore, is only a conſtant variety in the goat-kind, like the bull-dog in the ſpecies of the dog. On the other hand, the wild goat is unqueſtionably the primitive goat in a ſtate of nature, and is, with regard to the domeſtic goats, what the mouflon is to the ſheep. The wild he-goat perfectly reſembles the domeſtic he-goat in figure, ſtructure, habits, and diſpoſitions; and there are only two ſlight external differences between them. The horns of the wild he-goat are larger than thoſe of the common he-goat. The former have two longitudinal ridges, and the latter but one. They have alſo large tranſverſe protuberant rings, which mark the years of their growth; whilſt thoſe of the domeſtic he-goat have only a kind of tranſverſe ſtriæ or furrows. The figure of their bodies is preciſely the ſame. Their internal ſtructure is likewiſe perfectly ſimilar, with the exception of the ſpleen, which is oval in the wild he-goat, and approaches nearer to the ſpleen of the roebuck

or

or ſtag, than to that of the he-goat or ram. This difference may proceed from the violent exerciſe of the animal. The wild he-goat runs as ſwiftly as the ſtag, and leaps more nimbly than the roebuck. His ſpleen, therefore, ſhould reſemble that of the ſwifteſt running animals. Hence this ſlight difference depends more upon habit than nature; and it is probable, that, if our domeſtic he-goat ſhould become wild, and were obliged to run and leap like the wild he-goat, his ſpleen would ſoon aſſume the figure moſt conformable to this exerciſe. With regard to the difference of his horns, though very conſpicuous, they fail not to reſemble thoſe of the domeſtic he-goat more than thoſe of any other animal. Thus the wild and common he-goat approach nearer each other, even in the form of their horns, than any other animal; and, as their reſemblance is complete in every other article, we ſhould conclude, that, notwithſtanding this ſlight and ſolitary difference, they are both animals of the ſame ſpecies.

The wild, the chamois, and the domeſtic goat muſt, therefore, be conſidered as the ſame ſpecies, the males of which have undergone greater variations than the females: I find, at the ſame time, in the domeſtic kind, ſecondary varieties, which are the leſs equivocal, becauſe they belong equally to the males and females. We have ſeen that the goat of Angora *, though very

* See Vol. III. p. 493.

different

different from ours in the hairs and horns, is nevertheless of the same species. The same thing may be said of the Juda goat, which Linnæus has properly considered as a variety of the domestic species. This goat, which is common in Guiney *, Angola, and other parts of Africa, may be said to differ from ours only in being smaller, fatter, and more squat. Its flesh is excellent; and, in that country, it is preferred to mutton, as we prefer mutton to goat's flesh. The Levant or Mambrina goat †, with long pendulous ears, is only a variety of the goat of Angora, which has also pendulous ears, though they are not so long. These two goats were known to the ancients ‡; but they did not separate them from the common species. This variety of the Mambrina or the Syrian goat is more diffused than the goat of Angora; for we find goats with long

* In Guiney there are great numbers of goats similar to those in Europe, except that, like all the other cattle, they are very small. But they are fatter and plumper than wedders: It is for this reason that some people prefer the flesh of these small he-goats; which the natives castrate, to mutton; *Voyage de Bosman, p.* 328.

† It is called the Mambrina goat, because it is found on Mount Mambrina in Syria.——Capra Indica; *Gesner, Hist. Quad. p.* 267.——Hircus cornibus minimis, erectis, parumper retrorsum incurvis, auriculis longissimis pendulis.—Capra Syriaca; *La chevre de Syrie*; *Brisson, Regn. Anim. p.* 72.

‡ In Syria oves sunt cauda lata ad cubiti mensuram: Capræ auriculis mensura palmari et dodrantali, ac nonnullæ demissis, ita ut spectent ad terram.—In Cilicia capræ tondentur ut alibi ovis; *Aristot. Hist. Anim. lib.* viii. *cap.* xxviii.

ears

ears in Egypt *, and in the Eaſt Indies †, as well as in Syria. They yield a great deal of fine milk ‡, which the natives of the Eaſt prefer to that of the cow or buffalo.

With regard to the ſmall goat which Linnæus ſaw alive, and which produced with the American chamois, it muſt, as formerly remarked, have been originally tranſported from Africa; for it ſo ſtrongly reſembles the he-goat of Africa, that it is unqueſtionably the ſame ſpecies; or, at leaſt, it has ſprung from the ſame ſtock. In Africa it is ſmall; and it would become ſtill leſs in America; and we learn, from the teſtimony of travellers, that ſheep, hogs, and goats, have frequently, and for ſeveral ages back, been tranſported from Africa, as well as Europe, into America, where they ſtill ſubſiſt, without any other change than a diminution of ſize.

After examining the different varieties of goats, of which the nomenclators have made nine or ten different ſpecies, I am convinced that they ought

* Ex capris complures ſunt (in Ægypto) quæ ita aures oblongas habent, ut extremitate terram uſque contingant; *Proſper Alpin. Hiſt. Ægypt. lib.* iv. *p.* 229.

† At Pondicherry, there are kids which differ much from ours. They have large pendulous ears; and their aſpect is mean and ſilly. Their fleſh, though bad, is ſometimes eaten; *Nouveau Voyage, par le Sieur Luiller, p.* 30.

‡ Goats are remarkable for the length of their ears.—— The ſize of the animal is ſomewhat larger than ours; but their ears are often a foot long, and broad in proportion; they are chiefly kept for their milk, of which they yield no inconſiderable quantity; and it is ſweet, and well taſted; *Nat. Hiſt. of Aleppo, by Alexander Ruſſel, M. D.*

ought to be reduced to one: 1. The wild he-goat is the principal ſtock of the ſpecies. 2. The capricorne is the wild he-goat degenerated by the influence of climate. 3. The domeſtic he-goat derives his origin from the wild he-goat. 4. The chamois is only a variety in the ſpecies of the ſhe-goat, with whom, like the wild he-goat, he ſhould be able to mix and produce. 5. The ſmall goat, with erect horns, crooked at the points, mentioned by Linnæus, is the European chamois diminiſhed by the influence of the American climate. 6. The other ſmall goat, with horns lying flat on the ſkull, and which produced with the American chamois, is the ſame with the African he-goat; the fertility of theſe two animals is a proof that our chamois and domeſtic goat would alſo produce together, and, of courſe, that they belong to the ſame ſpecies. 7. The dwarf goat, which is probably the female of the African buck, is only, as well as the male, a variety of the common kind. 8. The ſame thing may be ſaid of the buck and ſhe-goat of Juda; for they are only varieties of our domeſtic goat. 9. The goat of Angora, as it produces with our goats*, belongs to the ſame ſpecies. 10. The Mambrina or Syrian goat, with very long pendulous ears, is a variety of the goat of Angora. Thus theſe ten animals are only different races of the ſame ſpecies, which have

* See Vol. III. article Goat.

been

been produced by the influence of climate. *Capræ in multas ſimilitudines transfigurantur*, ſays Pliny *. Indeed, from this enumeration, it is apparent, that the goats, though eſſentially ſimilar among themſelves, vary greatly in their external form; and, if we comprehend, like Pliny, under the generic name of *Goats*, not only thoſe we have mentioned, but likewiſe the roebuck, the antilopes, &c. this ſpecies would be the moſt extenſive in Nature, and contain more races and varieties than that of the dog. But Pliny, when he joined the roebuck, antilopes, &c. to the ſpecies of the goat, betrayed his ignorance of the real diſtinction of ſpecies. Theſe animals, though they reſemble the goat in many reſpects, conſtitute two different ſpecies; and we will perceive from the following articles, how greatly the antilopes vary both in ſpecies and in races; and after enumerating all the antilopes and all the goats, we will ſtill find other animals which participate of both. In the whole hiſtory of quadrupeds, I have met with nothing ſo confuſed, ſo uncertain, and ſo obſcure, as the accounts given us by naturaliſts and travellers concerning the goats, the antilopes, and the ſpecies which have a relation to them. I have exerted every effort to throw

* Capræ tamen in plurimas ſimilitudines transfigurantur; ſunt capreæ, ſunt rupicapræ, ſunt ibices.—Sunt et origes.—Sunt et Damæ et Pygargi et Strepſicerotes, multaque alia haud diſſimilia; *lib.* viii. *cap.* liii.

light upon this ſubject; and ſhall not regret my labour, if what I now write ſhould contribute to remove error, and to extend the views of thoſe who incline to ſtudy Nature. But to return to our ſubject.

The goats are ſubject to vertigos: This diſeaſe is likewiſe common to the wild and chamois goats*, as well as the inclination to climb upon rocks, and the habit of perpetually licking ſtones†, eſpecially thoſe which are impregnated with nitre or ſalt. In the Alps, we find rocks hollowed with the tongues of the chamois. They are generally compoſed of tender and calcinable ſtones, in which there is always a certain quantity of nitre. Theſe conformities in natural diſpoſitions and manners appear to be

* In the mountains of Switzerland, the chamois or wild goats are very frequent.——The natives inform us, that theſe animals are ſubject to vertigos; and that, when attacked with this diſeaſe, they ſometimes come down to the meadows, and mix with the horſes and cows, when they are taken with eaſe; *Extrait du Voyage de Jean-Jacques Scheuchzer*; *Nouvelles de la Republique des Lettres, p.* 182.

† Conveniunt ſæpe circa petras quaſdam arenoſas, et arenam inde lingunt.——Qui Alpes incolunt Helvetii hos locos ſua lingua *Fulizen* tanquam ſalarios appellant; *Geſner, Hiſt. Quad. p.* 292.——What is ſingular, in the Alps there are ſeveral rocks which have been hollowed by the conſtant licking of the chamois goats. This licking is not occaſioned, as has been alledged, by ſalt contained in theſe ſtones, which is very rarely the caſe; for the rocks are porous, and compoſed of grains of ſand, which are eaſily detached; and they are ſwallowed by the animals with great avidity; *Extrait de Scheuchzer, ibid. p.* 185.

infallible

infallible indications of identity of ſpecies. The Greeks, as formerly remarked, did not divide theſe three animals into three diſtinct kinds; and our hunters, who probably never conſulted the Greeks, have alſo regarded them as the ſame ſpecies. Gaſton Phœbus *, when treating of the wild goat, points him out under the name of the *wild buck;* and the chamois, which he calls *yſarus* and *ſarris*, in his eſtimation, is only another wild buck. I acknowledge that all theſe authorities amount not to a complete proof: But, when joined to the facts and reaſonings already employed, they form ſo ſtrong a preſumption, with regard to the unity of ſpecies in theſe three animals, as leaves no room for heſitation.

The wild and chamois goats, which I conſidered, the one as the male, and the other as the female ſtock of the goat-kind, are only found, like the mouflon, which is the ſtock of the ſheep, in the deſerts and in the higheſt and moſt rugged mountains. The Alps, the Pyrennees, the Grecian mountains, and thoſe in the iſlands of the Archipelago, are almoſt the only places where the wild and chamois goats are to be found. Though both avoid heat, and inhabit the regions of ſnow and froſt; yet they equally avoid the exceſſive rigours of cold. In ſummer, they dwell on the northern ſides of the mountains; in winter, they frequent the ſouthern ſides, and deſcend

* La Venerie de Gaſton Phœbus, p. 68.

from

from the ſummits into the plains. Neither of them can ſupport themſelves on ſmooth ſheets of ice; but, when the ice is rendered rough by the ſnow, they run and bound with great firmneſs and agility. The chaſe of thoſe animals *, eſpecially that of the wild he-goat, is

* There are two kinds of bucks; ſome are called *wild bucks*, and others *yſarus* or *ſarris*. The wild bucks are as large as a ſtag; but, though they have as much fleſh, they are neither ſo long, nor make ſuch great bounds. The years of their age correſpond with the number of rings which encircle their horns.—When old, their horns, which have no branches, are as thick as a man's leg. They never caſt their horns; but they continue to grow in length and thickneſs as long as the animal lives. They have a large beard, and their hair is brown like that of the wolf. A black bar runs along their back and down the buttocks. Their belly is yellow, and their legs black, and yellow behind. Their feet, like thoſe of the domeſtic goat, are cloven; and their tracks are large, and rounder than thoſe of the ſtag. The female, like that of the hind, or common ſhe-goat, produces but one at a time.

The bucks feed upon herbage like other cattle.—Their dung reſembles that of the domeſtic goat. They come in ſeaſon about All-Saints-day, and their rutting ſeaſon continues a month. When that ſeaſon is over, they are much emaciated; and they deſcend from the rocks and mountains, where they had dwelt during the ſummer, to the plains, in queſt of food. They remain at the foot of the mountains, till toward Eaſter, when they return to the moſt elevated places they can find, and each takes poſſeſſion of his buſh, like the ſtags. The females, at this period, ſeparate from the males, and retire near the brooks, in order to fawn, where they remain during the ſummer. When the bucks are thus ſeparated from the females, eſpecially at the approach of the rutting ſeaſon, they attack both man and beaſt. They alſo fight among themſelves, like the ſtags, but in a different manner;

is very laborious; for dogs are almoſt uſeleſs in this kind of hunting. It is alſo ſometimes dangerous: When the animal finds himſelf hard puſhed, he gives the hunter a violent blow with his head, and often throws him over a precipice *. Though not ſo ſtrong as the wild bucks, the chamois goats are equally active †. They are

manner; for their quarrels are more formidable. The buck ſtrikes ſo furiouſly with his head, that he often breaks the legs of thoſe whom he attacks; and, if he runs a man againſt a tree, or throws him down on the ground, death is infallibly the conſequence. Such is the nature of the buck, that, though a ſtrong man gives him a blow on the back with a bar of iron, the animal's ſpine does not break. In the ſeaſon of love, his neck ſwells prodigiouſly: And, though he falls from a height of ten fathoms, he receives no injury.

The buck called *Yſarus* is of the ſame figure with the preceding, and is not larger than the domeſtic he-goat. His nature is the ſame with that of the wild buck.——Like the ſtag, both come in ſeaſon about All-Saints-day, and they ſhould be hunted till that period arrives.——When they can find no other food in winter, they eat the leaves of the pine-tree, which are always green. Their ſkin, when properly dreſſed, is an excellent defence againſt the cold; for, when the hair is outmoſt, neither cold nor rain can penetrate it. Their fleſh is not very wholeſome; for it produces fevers.——The hunting of the buck is not very pleaſant; for we can neither accompany the dogs on foot nor on horſeback; *Gaſton Phœbus, Venerie de Dufoilloux, p.* 68.

* Ibex venatorem expectat, et ſolicite obſervat an inter ipſum et rupem minimum interſit ſpatium; nam ſi viſu dumtaxat intertueri (ut ita loquar) poſſit, impetu facto ſe tranſſert et venatorem impulſum præcipitat; *Stumpſius apud Geſner, p.* 305.

† M. Perroud, undertaker of the chryſtal mines in the Alps, brought a live chamois to Verſailles, and gave us the following

more numerous, and go generally in flocks. In the Alps and Pyrennees, however, they are not now

ing excellent remarks on the nature and manners of this animal: "The chamois, though a wild animal, is very docile. He inhabits only the mountains and rocks. He is of the size of a domestic goat, which he greatly resembles. His vivacity is delightful, and his agility truly admirable. His hair is as short as that of a hind: In spring, it is ash-coloured, in summer it is yellowish, in autumn yellowish brown mixed with black, and, in winter, brownish black. The chamois goats are numerous in the mountains of Upper Dauphiny, Piedmont, Savoy, Switzerland, and Germany. They are very social among themselves: We find them going in pairs, or in little flocks of from three to twenty; and sometimes we see from sixty to a hundred of them dispersed in different flocks along the declivity of the same mountain. The large males keep at a distance from the rest, except in the rutting season, when they join the females, and beat off all the young. At this period, their ardour is still stronger than that of the wild bucks. They bleat often, and run from one mountain to another. Their season of love is in the months of October and November, and they bring forth in March and April. A young female takes the male at the age of eighteen months. The females bring forth one, but rarely two, at a time. The young follow their mothers till October, if not dispersed by the hunters or the wolves. We are assured that they live between twenty and thirty years. Their flesh is very good. A fat chamois goat will yield from ten to twelve pounds of suet, which is harder and better than that of the goat. The blood of the chamois is extremely hot, and it is said to have qualities and virtues nearly equal to those of the wild goat, and may serve the same purposes; for the effects are the same, when taken in a double dose. It is good against pleurisies, and possesses the property of purifying the blood, and promoting perspiration. The hunters sometimes mix the blood of the wild and chamois goats: At other times, they sell the blood of the wild goat for that of the chamois. It is very difficult to distinguish them; which shews

now ſo frequent as formerly. The term *Chamoiſeurs*, which was applied to all tranſporters of ſkins,

ſhews that the blood of the wild goat differs very little from that of the chamois. The voice of the chamois is a very low and almoſt imperceptible kind of bleating, reſembling that of a hoarſe domeſtic goat. It is by this bleating that they collect together, particularly the mothers and their young. But, when alarmed, or when they perceive an enemy, or any thing the nature of which they cannot diſtinguiſh, they advertiſe one another by a kind of whiſtling noiſe, which I ſhall afterwards deſcribe. The ſight of the chamois is very penetrating, and his ſenſe of ſmelling is acute. When he ſees a man diſtinctly, he ſtops for ſome time, and flies off, when he makes a nearer approach. His ſenſe of hearing is equally acute as that of ſmelling; for he hears the ſmalleſt noiſe. When the wind blows in the direction between him and a man, he will perceive the ſcent at the diſtance of more than half a league. Hence, when he ſmells or hears any thing which he cannot ſee, he whiſtles or blows with ſuch force, that the rocks and foreſts re-echo the ſound. If there are many of them near, they all take the alarm. This whiſtling is as long as the animal can blow, without taking breath. It is at firſt ſharp, and turns flat towards the end. The chamois then ſtops for a moment, looks round on all ſides, and begins whiſtling afreſh, which he continues from time to time. His agitation is extreme. He ſtrikes the earth with his feet. He leaps upon the higheſt ſtones he can find: He again looks round, leaps from one place to another, and, when he diſcovers any thing, he flies off. The whiſtling of the male is ſharper than that of the female. This whiſtling is performed through the noſtrils, and conſiſts of a ſtrong blowing, ſimilar to the ſound which a man may make by fixing his tongue to the palate, with his teeth nearly ſhut, his lips open, and ſomewhat extended, and blowing long and with great force. The chamois feeds on the fineſt herbs. He ſelects the moſt delicate parts of plants, as the flowers and the tendereſt buds. He is very fond of ſome aromatic herbs, particularly of the carline thiſtle and genipay, which are the hotteſt plants that grow in the Alps. When he eats green herbs, he drinks very little. He is very fond

ſkins, ſeems to indicate, that the chamois ſkins were at that time the chief article of their commerce;

fond of the leaves and tender buds of ſhrubs. He ruminates like the common goat. The food he uſes ſeems to announce the heat of his conſtitution. This animal is admired for his large round eyes, whoſe ſize correſponds with the vivacity of his diſpoſition. His head is adorned with two ſmall horns, from half a foot to nine inches in length. Their colour is a fine black, and they are placed on the front nearly between his eyes; and, inſtead of being reflected backward, like thoſe of other animals, they advance forward above the eyes, and bend backward at the points, which are extremely ſharp. He adjuſts his ears moſt beautifully to the points of his horns. Two tufts of black hair deſcend from the horns to the ſides of his face. The reſt of the head is of a yellowiſh white colour, which never changes. The horns of the chamois are uſed for the heads of canes. Thoſe of the female are ſmaller and leſs crooked. The ſkin of the chamois, when dreſſed, is very ſtrong, nervous, and ſupple, and makes excellent riding breeches, gloves, and veſts. Garments of this kind laſt long, and are of great uſe to manufacturers. The chamois is a native of cold countries, and always prefers rugged rocks and lofty places. They frequent the woods; but it is only thoſe in the higher regions of the mountains. Theſe woods conſiſt of pines, larches, and beeches. The chamois goats are ſo impatient of heat, that, in ſummer, they are only to be found under the ſhades of caverns in the rocks, among maſſes of congealed ſnow and ice, or in elevated foreſts on the northern declivities of the moſt ſcabrous mountains, where the rays of the ſun ſeldom penetrate. They paſture in the mornings and evenings, and ſeldom during the day. They traverſe the rocks and precipices with great facility, where the dogs dare not follow them. There is nothing more worthy of admiration than to ſee theſe animals climbing or deſcending inacceſſible rocks. They neither mount nor deſcend perpendicularly, but in an oblique line. When deſcending, particularly, they throw themſelves down acroſs a rock, which is nearly perpendicular, and of twenty or thirty feet in height, without having a ſingle prop to ſupport their feet. In deſcending, they

merce; but the ſkins of goats, ſheep, ſtags, roe-bucks, and the fallow deer, are their principal objects.

With

they ſtrike their feet three or four times againſt the rock, till they arrive at a proper reſting-place below. The ſpring of their tendons is ſo great, that, when leaping about among the precipices, one would imagine they had wings inſtead of limbs. It has been alleged, that the chamois, in climbing and deſcending rocks, ſupports himſelf by his horns. I have ſeen and killed many of theſe animals; but I never ſaw them uſe their horns for this purpoſe; neither did I ever hear the fact ſupported by any hunter. It is by the ſtrength and agility of his limbs that the chamois is enabled to climb and deſcend rocks. His legs are very free and tall; thoſe behind are ſomewhat longer, and always crooked, which favours their ſpringing to a great diſtance; and, when they throw themſelves from a height, the hind-legs receive the ſhock, and perform the office of two ſprings in breaking the fall. It is ſaid, that, when there are numbers of chamois goats together, one is deputed to ſtand ſentinel, for the protection of the reſt. I have ſeen many flocks of them, but never obſerved this part of their œconomy. It is true, that, when there are many of them, ſome always watch while others eat; but I remarked nothing more ſingular here than what happens in a flock of ſheep: For the firſt who perceives any thing alarming, advertiſes the reſt, and, in an inſtant, the ſame terror is communicated to the whole. In great ſnows, and during the rigour of winter, the chamois goats inhabit the lower foreſts, and live upon pine leaves, the buds of trees, buſhes, and ſuch green or dry herbs as they can find by ſcratching off the ſnow with their feet. The foreſts that delight them moſt, are thoſe which are full of rocks and precipices. The hunting of the chamois is very difficult and laborious. The mode moſt in uſe is to kill them by ſurpriſe. The hunters conceal themſelves behind rocks or large ſtones, taking care that the wind blows oppoſite to them, and, when a favourable opportunity occurs, ſhoot them with muſket balls. They are like-

 wiſe

With regard to the ſpecific virtue attributed to the blood of the wild goat, againſt certain diſeaſes, and particularly the pleuriſy, a virtue which is thought to be peculiar to this animal, and which, of courſe, would lead us to think it to be of a peculiar nature; it has been diſcovered, that the blood of the chamois *, and likewiſe that of the domeſtic he-goat †, have the ſame properties, when the animals are nouriſhed with the ſame aromatic herbs; ſo that even this property ſeems to unite theſe three animals in the ſame ſpecies.

SUPPLEMENT.

WE here give a figure of a Juda buck, which appears to be different from that publiſhed in the original work. M. Bourgelat had it alive, and ſtill keeps its ſkin in his anatomical cabinet. It was conſiderably larger than the one formerly

wiſe hunted in the ſame manner as ſtags and other animals, by poſting ſome of the hunters in narrow paſſes, while others beat about to raiſe the game. Men are preferable for this purpoſe to dogs; for dogs too quickly diſperſe the animals, who ſly off ſuddenly to the diſtance of four or five leagues." See alſo on this ſubject, *La troiſieme Deſcript. du Voyage des Alpes de Scheuchzer, p.* 11.

* See above, *p.* 386.

† See l'Hiſt. des Animaux, par Meſſ. Arnault de Nobleville & Salerne, tom. iv. p. 243.

engraved. It was two feet nine inches long, and one foot ſeven inches high, while the other was only twenty-four inches and a half long, and ſeventeen inches high. The head and whole body were covered with large white hairs. The points of the noſtrils were black. The horns nearly touch each other at the baſe, and then recede. They are much longer than thoſe of the former, which the preſent one reſembles in the feet and hoofs. Theſe differences are too ſlight to conſtitute two diſtinct ſpecies. They ſeem to be only varieties of the ſame ſpecies.

We formerly mentioned Syrian goats with pendulous ears, which were nearly of the ſame ſize with the domeſtic kind, and produced with them even in our climate. In Madagaſcar there is a goat conſiderably larger, with pendulous ears ſo long, that, when they fall down, they cover the eyes, which obliges the animal to move its head almoſt continually in throwing them back. Hence, when purſued, it always endeavours to aſcend. This notice was communicated to us by M. Comerſon; but it is too imperfect to enable us to determine whether this goat belongs to the Syrian race with pendulous ears, or to a different ſpecies.

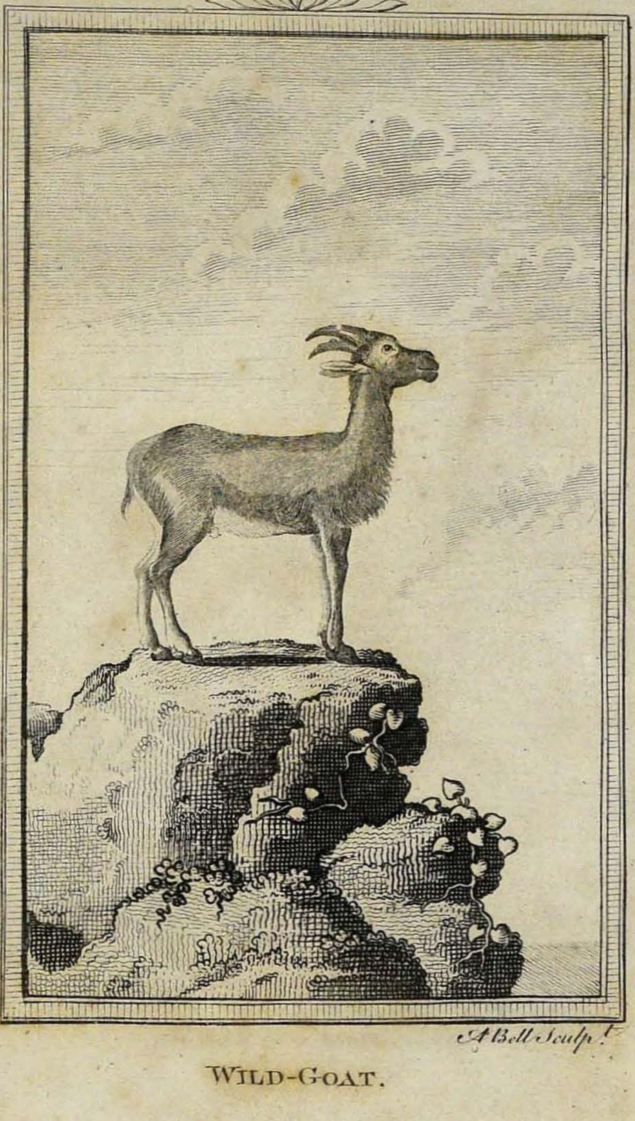
We had the following note from M. le Vicomte de Querhoënt:

'The goats which were left on Aſcenſion

'iſland

'island have multiplied greatly; but they are 'very meager, especially in the dry season. 'The whole island is beaten with their tracks. 'During the night, they retire into the excava- 'tions of the mountains. They are not so large 'as the common goat. They are so weak, that 'men sometimes seize them in the chace. 'Their hair is generally of a deep brown 'colour.'

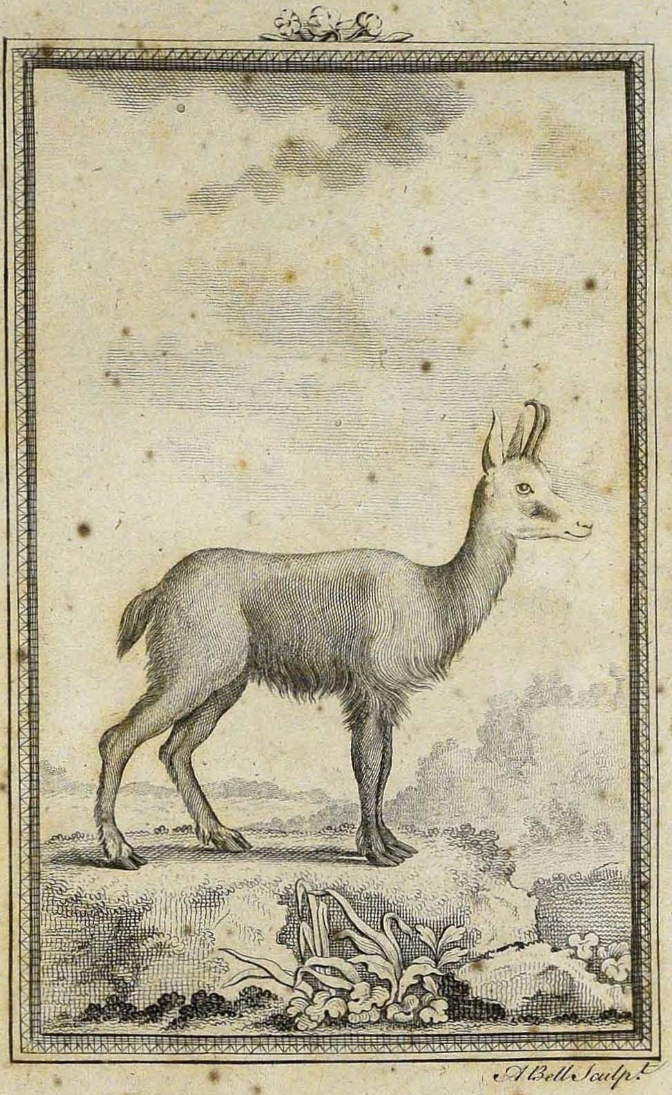
Plate CXC.



A Bell Sculp.t

WILD-GOAT.

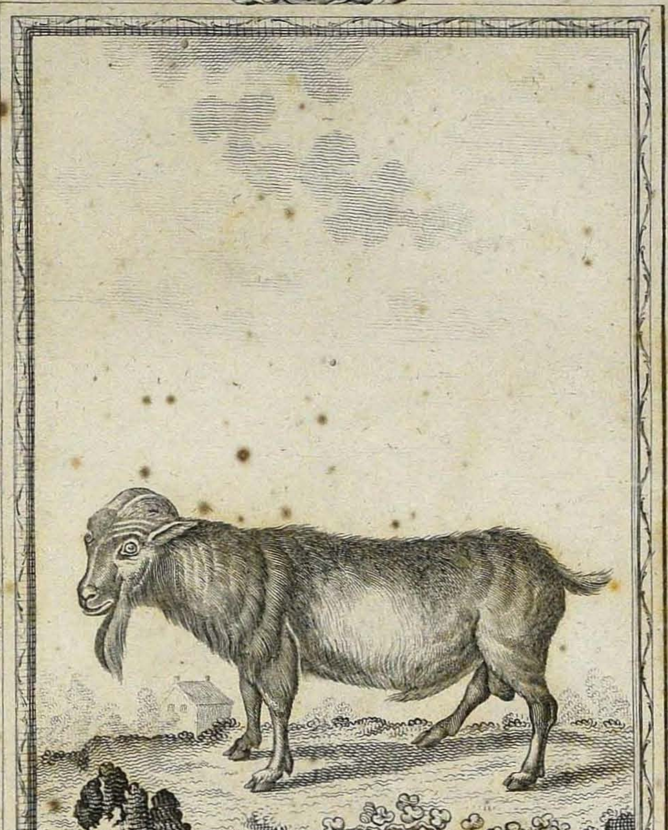
Plate CXCI.



A. Bell Sculp.t

CHAMOIS GOAT.

Plate CXCII.



A Bell Sculp.

AFRICAN HE-GOAT.

Plate CXCIII.

A. Bell Sculpt.

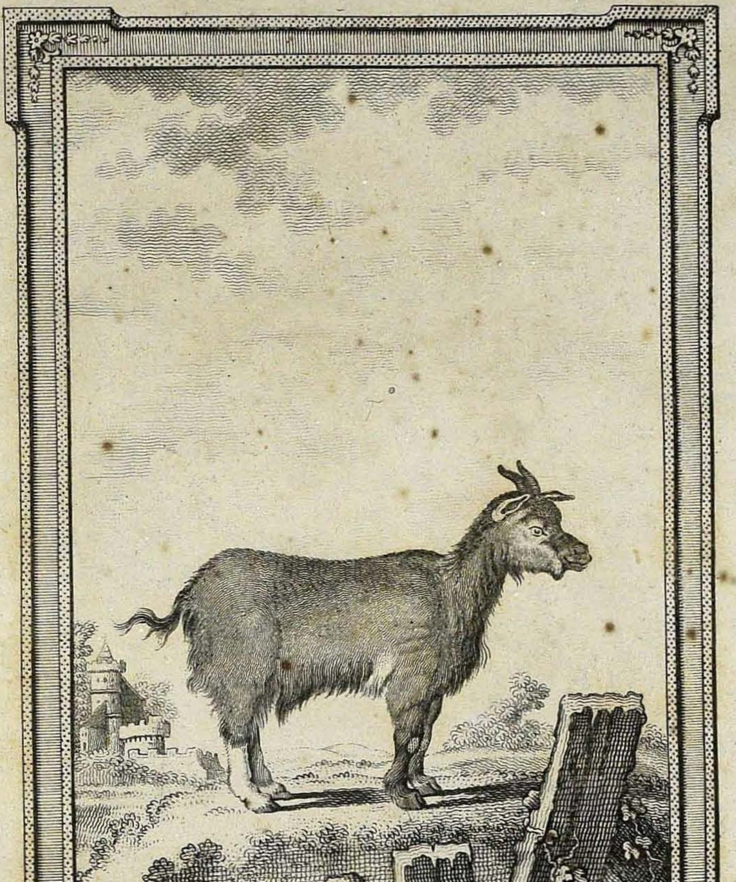
DWARF GOAT.

Plate CXCIV.

A. Bell Sculpt.

BUCK of JUDA.

Plate CXCV.



A Bell Sculpt.

SHE-GOAT of JUDA.

Plate CXCVI.

BUCK of JUDA.

The SAIGA, or SCYTHIAN ANTILOPE*.

IN Hungary, Poland, Tartary, and the southern parts of Siberia, there is a species of goat, called *Seigah* or *Saiga* by the Russians, which, in the figure of the body and the hair, resembles

* The Scythian antilope has horns a foot long, bending a little in the middle, the points inclining inward, and the ends smooth; the other part is surrounded with very prominent annuli. They are of a pale yellow colour, and the greatest part semipellucid. The length of the animal is four feet nine inches and a quarter; the height before, two feet six inches and a half, and behind, two feet seven inches and a half. The tail is three inches long. The head is like that of a sheep; the nose is very large, arched, and marked the whole length with a small line, caused by the elevation of the *septum narium*. The nostrils are tubular and large. The upper lip hangs over the under. The nose is formed of a muscular substance mixed with fat. The cutting teeth are so loose in their sockets, as to move with the least touch. The male is covered with rough hair, like the he-goat, and has a very strong smell: The female is smoother. The hair on the bottom of the sides and the throat is long, and resembles wool; that on the sides of the head and neck is hoary. The back and sides are of a dirty white colour. The breast, belly, and inside of the thighs, are of a shining white. The females are hornless and timid: If attacked by wolves or dogs, the males place the females in the centre, and defend them stoutly. They bleat like sheep. Their common pace is a trot; when they go faster, it is by leaps, and they are swifter than roe-bucks. When they feed, they lift up the upper mandible, and go backward; *Pennant's Synops. of Quad. p.* 35.

Colus;

resembles the domestic goat. But the form of its horns and the want of a beard make it approach nearer to the antilopes; and, indeed, it seems to constitute the shade between these two kinds of animals; for the horns of the saigæ are perfectly similar in figure, transverse rings, longitudinal furrows, &c. to those of the antilope, and they differ in colour only. The horns of all the antilopes are black and opaque; but those of the saiga are whitish and transparent. This animal is mentioned by Gesner under the name of *colus* *, and Gmelin under that of *saiga*.

Colus; *Gesner, Quad. p.* 361.
Suhak; *Rzaczinski, Hist. Polon. p.* 224.
Ibex imberbis; *Nov. Com. Petrop. tom.* v. *tab.* xix. *tom.* vii. *p.* 39.
Sayga; *Phil. Trans.* 1767. *p.* 344. *Bell's Travels, vol.* i. *p.* 43.
Capra Tartarica, cornibus teretibus, rectiusculis, perfecte annulatis, apice diaphanis, gula imberbi; *Linn. Syst. Nat.* p. 97.
Antilope Scythica; *Pallas Spicil. p.* 9. *Faunul. Sinens.*

* Apud Scytas et Sarmatas quadrupes fera est quam *Colon* (Κόλος) appellant, magnitudine inter cervum et arietem, albicante corpore; eximiæ supra hos levitatis ad cursum; *Strabo*, lib. vii. . . . . Sulac (a quo litteris transpositis nomen *Colus* factum videtur) apud Moschovios vulgo nominatur animal simile ovi sylvestri candidæ, sine lana: capitur ad pulsum tympanorum dum saltando delassatur . . . Apud Tartaros (inquit Matthias a Michow) reperitur *Snack*, animal magnitudine ovis, duabus parvis cornibus præditum, cursu velocissimum, carnes ejus suavissimæ . . . In desertis campis circa Borysthenem (iniquit Sigismundus, Liber Baro in Herberstain in commentariis rerum Moscoviticarum) Tanaim et Rha est ovis sylvestris quam Poloni *Solbac*, Mosci *Seigak*, appellant, magnitudine capreoli, brevioribus tamen pedibus; cornibus

*ſaiga**. The horns in the Royal cabinet were ſent under the denomination of *horns of the Hungarian*

nibus in altum porrectis, quibuſdam circulis notatis, ex quibus Moſci manubria cultellorum tranſparentia faciunt, velociſſimi curſus et altiſſimorum ſaltuum; *Geſner, Hiſt. Quad. p.* 361. et 362. ubi vide figuras.

* In the environs of Sempalat, there are a number of *Saigi* or *Saiga*. This animal has a great reſemblance to the roebuck, except that its horns are ſtraight. It is known in no other part of Siberia; for what is called *Saiga* in the province of Irkutzk is the muſk. . . . The taſte of its fleſh, it is ſaid, reſembles that of the ſtag; *Voyage de Gmelin à Kamtſchatka, tom.* i. *p.* 179.—*Note*, M. Gmelin has ſince publiſhed a more comprehenſive deſcription of the ſaiga, in the firſt volume of the New Memoirs of the Academy of Peterſburg, under the name of *ibex imberbis*; but he has given no figure of it. M. Gmelin remarks, that this animal has the head of a ram, with a higher and more prominent noſe, and the body of a ſtag, but ſmaller; for it never reaches the ſize of a roebuck. The horns are yellowiſh and tranſparent, a foot in length, have rings or circles toward the baſe, and are ſituated above the eyes. The ears are erect, pretty large, and terminate in a point. In the under jaw, there are four cutting, four canine, and five grinding teeth, each of the laſt having two roots. In the upper jaw there are an equal number of cutting and canine teeth, but only four grinders, each of which has three roots. The neck is pretty long. The hind are longer than the fore-legs. The foot is cloven. The female has four paps. The tail is thin, and about three inches long. The hair, like that of the ſtag, is of a yellowiſh brown colour on the body, and white under the belly. The female is ſmaller than the male, and has no horns. . . . Worms breed under their ſkin. . . . Theſe animals copulate in autumn, and bring forth one or two young in the ſpring. They live upon herbage, and are very fat when the rutting ſeaſon commences. In ſummer, they inhabit the plains along the banks of the Irtis. In winter, they go to the higher grounds; and they are found not only about the Irtis, but in all the countries watered by the Boriſthenes, the Don, and the Wolga; *Vide Nov. Com. Acad. Petrop. tom.*

Hungarian buck. They are ſo tranſparent, that they are uſed for the ſame purpoſes as ſhells. In natural diſpoſitions, the ſaiga has a greater reſemblance to the antilopes than to the wild and chamois goats; for he does not frequent the mountains, but, like the antilopes, lives on the hills and plains. Like them, he is extremely ſwift, and his motion conſiſts of bounds or leaps. His fleſh is alſo better than that of either the wild or domeſtic goat.

tom. v. *p.* 345.——The ſecretary of the Peterſburg Academy adds, to what M. Gmelin has remarked, that the ſaiga goes backward when he feeds. . . . That their horns are purchaſed by the Chineſe to make lanthorns. . . . That they are only found under the 54th degree of latitude; and that, in the Eaſt, there are none beyond the river Oby; *Ibid. p.* 35.

The ANTILOPES, or GAZELLES*.

OF the animals called *antilopes*, we know thirteen ſpecies, or at leaſt thirteen diſtinct varieties. In this uncertainty with regard to ſpecies and variety, we thought it beſt to treat of the whole under one article, aſſigning to each, however, a proper name. The firſt of theſe animals is the common *gazelle*, or Barbary antilope †, which is found in Syria, Meſopotamia, and other provinces of the Levant, as well as in

* In Arabic, *Gazal*, a generic name applied to ſeveral ſpecies of animals.

† The horns of the Barbary antilope are twelve inches long, round, inclining firſt backward, bending in the middle, and then reverting forward at their ends, and annulated with about thirteen rings on their lower part. The upper ſide of the body is of a reddiſh brown colour; the lower part and buttocks are white. Along the ſides, the two colours are ſeparated from each other by a ſtrong duſky line. On each knee there is a tuft of hair; *Pennant's Synopſ. of Quad. p.* 33.

Gazella Africana, cornibus brevioribus, ab imo ad ſummum fere annulatis et circa medium inflexis; *Raii Synopſ. Quad. p.* 80.

Capra dorca, cornibus teretibus, perfecte annulatis, recurvatis, contortis; *Linn. Syſt. Nat. p.* 96.

Algazel ex Africa; *Hernand. Hiſt. Mexic. p.* 893.

Hircus cornibus teretibus, arcuatis, ab imo ad ſummum fere annulatis, apice tantummodo levi. . . Gazella Africana; La Gazelle d'Afrique; *Briſſon. Quad. p.* 15.

Dorcas, Dorcades Libycæ ventre ſunt albo, qui color eis ad laparas uſque adſcendit, ad ventrem vero utrinque latera nigris vittis diſtinguuntur; reliqui corporis color rufus aut flavus eſt, et pedes quidem eis longi ſunt, oculi nigri, cornibus caput ornatur, et longiſſimas aures habent; *Elian. de Nat. Anim. lib.* xiv. *cap.* xiv.

Barbary,

Barbary, and in all the northern parts of Africa. The horns of this antilope are about a foot in length. They have entire rings at their baſe, and then half rings till within a ſmall diſtance from the extremities, which are ſmooth and pointed. They are not only ſurrounded with rings, but furrowed longitudinally. The rings mark the years of growth, and they are commonly from twelve to thirteen in number. The antilopes in general, and this ſpecies in particular, have a great reſemblance to the roebuck in figure, natural functions, nimbleneſs of movement, vivacity, largeneſs of the eyes, &c. And, as the roebuck exiſts not in the countries inhabited by the antilope, we would at firſt be led to conclude, that it is only a degenerated roebuck, or that the roebuck is an antilope whoſe nature has been changed by the effects of climate and food. But the antilopes differ from the roebuck in the ſubſtance of their horns. Thoſe of the roebuck are a kind of ſolid *wood*, which falls off and is renewed annually, like that of the ſtag. The horns of the antilopes, on the contrary, are hollow and permanent, like thoſe of the goat. Beſides, the roebuck has no gall-bladder. The antilopes, as well as the roebucks, have hollows before the eyes. They reſemble each other ſtill more in the quality of the hair, in the whiteneſs of the buttocks, and in the tufts on their legs; but, in the roebuck, theſe tufts are on the hind-legs, and on the fore-legs of the antilopes. Hence the antilopes ſeem to be intermediate

animals

animals between the roebuck and goat. But when it is conſidered that the roebuck exiſts equally in both Continents, and that the goats, as well as the antilopes, are peculiar to the Old World, we are led to think, that the goats and antilopes are more allied to each other than they are to the roebuck. Beſides, the only characters peculiar to the antilopes are the tranſverſe rings and longitudinal furrows on the horns; the tufts of hair on the fore-legs; a thick and well defined band of black, brown, or reddiſh hairs below the flanks; and, laſtly, three ſtripes of whitiſh hairs, which extend longitudinally upon the internal ſurface of the ears *.

The

* Algazel ex Africa, animal exoticum . . . ex Africa Neapolim miſſum; magnitudine Capreæ, *Capreoli* dicti, cui toto habitu prima facie ſimile, niſi quod cornibus nulli magis quam hirco ſimilioribus ſit præditum. . . Pilo eſt brevi, levi, flavicante, at in ventre et lateribus candicante, ſicut in internis femorum et brachiorum, illoque capreolo molliori. Altitudo illius in poſterioribus, quæ, ſublimiora ſunt anterioribus tibiis, tres ſpithamas æquat. Corpus obeſius, et collum craſſius habet; cruribus et tibiis admodum gracile: Ungulis biſulcis admodum diſſectis, illiſque tenuibus, et hircinis oblongioribus, et acutioribus ſimilitudine alces, et nigricantibus. Caudam habet dodrantem fere piloſam, hircinam, et a medio uſque ad extremum nigreſcentem. . . . Hilaris aſpectu facies; oculi magni, nigri, lucidi, læti; aures longæ, magnæ, patulæ, in proſpectu elatæ, illæque intus canaliculatæ quinquefido ſtrigium ordine nigricante, extumentibus circa illas ſtriis piloſis candicantibus, et linea tenui circumducta. . . Cornua pedem Romanum longa, retrorſum inclinata, hircina, ex nigro caſtaneo colore cochleatim ſtriata, et interno ſitu ad invicem ſinuata, et poſt dilatationem reflexà, atque deinde in extremo parum acie reſupinata. . . Naſus colore magis rufo, ſicuti ex oculis

The ſecond antilope is found in Senegal, where, according to Mr. Adanſon, it is called *kevel* *. It is leſs than the common kind, and is nearly of the ſize of our ſmall roebucks. Its eyes are alſo larger than thoſe of the gazelle, and its horns, inſtead of being round, are flattened on the ſides. This compreſſion of the horns proceeds not from a difference of ſex; for, in both males and females, the horns of the one ſpecies are round, and of the other flat. In every other article, the reſemblance is complete. The kevel, like the gazelle, has ſhort yellow hair, a white belly and thighs, a black tail, a brown band under the flanks, three white ſtripes on the ears, black horns ſurrounded with rings, longitudinal furrows between the rings, &c. The number of theſe rings, however, is greater in the kevel than in the gazelle; for the latter has generally twelve or thirteen, and the former at leaſt fourteen, and often eighteen.

oculis parallelo ordine linea nigricans dependet ad os uſque, reliquis candicantibus. Nares et labia, os et lingua nigreſcunt, quod ſatis dum ruminabat obſervavimus; dentibus, ovium modo, exiguis et vix conſpicuis; vocem edit non abſimilem ſuillæ. *Fab. Columnæ*, Annot. et Addit. in rerum Med. Nov. Hiſp. Nardi. Ant. Recchi. . . *Hernand. Hiſt. Mex. p.* 893 et 894.

* The horns of the kevel, or flat-horned antilope, are ſhaped like thoſe of the laſt, but flatted on their ſides. The rings are more numerous, being from fourteen to eighteen. It is of the ſize of the roebuck; and in colours and marks reſembles the preceding ſpecies; *Pennant's Synopſ. of Quad. p.* 34.

Antilope kevella; *Pallas, Miſcel.* vii. *ſpicil.* xii.

The

The third antilope we ſhall denominate *corine**, from the name *korin*, which it bears, according to M. Adanſon, in Senegal. It has a great reſemblance to the gazelle and kevel. But it is ſtill ſmaller than the kevel, and its horns are thinner, ſhorter, and ſmoother, the rings which encircle them being hardly perceptible. M. Adanſon, who communicated to me his deſcription of this animal, ſays, that it appeared to partake ſomewhat of the chamois goat, but that it was much ſmaller, being only two feet and a half long, and leſs than two feet high; that his ears are four inches and a half in length, the tail three inches, the horns ſix inches long, and only half an inch thick; that they are two inches aſunder at the baſe, and from five to ſix at their extremities; that, inſtead of rings, they have circular *rugæ*, very near each other in the inferior part, and more diſtant in the ſuperior; that theſe *rugæ*, which hold the place of rings, are about ſixteen in number; that the hair of this animal, which is ſhort, ſhining, and cloſe ſet, is yellow on the back and flanks, white on the belly, and

* The corine, or ſpotted antilope, has very ſlender horns, ſix inches long, and ſurrounded with circular *rugæ*. It is leſs than a roebuck. On each ſide of the face there is a white line. The neck, body, and flanks, are tawny; the belly and inſide of the thighs white, which is ſeparated from the ſides by a dark line. On the knees there is a tuft of hair. Some are irregularly ſpotted with white. Perhaps theſe are the ſpotted goats of Kolben, tom. ii. p. 115; *Pennant's Synopſ. of Quad. p.* 37.

the inſide of the thighs; that the tail is black; and that, in the ſame ſpecies, ſome individuals have white ſpots ſcattered over their bodies without any order.

Theſe differences between the gazelle, the kevel, and the korine, though very conſpicuous, ſeem to be neither eſſential, nor ſufficient to make theſe animals three diſtinct ſpecies. In every other reſpect, they reſemble each other ſo ſtrongly, that they appear to be of the ſame ſpecies, varied a little by the influence of climate and food; for the kevel and gazelle differ leſs from one another than from the corine, whoſe horns reſemble not thoſe of the other two. But all the three have the ſame natural habits; they go in troops, aſſociate together, and feed in the ſame manner; their diſpoſitions are gentle; they are eaſily accuſtomed to a domeſtic ſtate; and their fleſh makes excellent eating. We may, therefore, conclude, that the gazelle and kevel certainly belong to the ſame ſpecies, and that it is doubtful whether the corine be a variety only of the ſame, or really conſtitutes a diſtinct ſpecies.

In the royal cabinet, there are ſpoils, either entire or partial, of theſe three antilopes. We have likewiſe a horn, which greatly reſembles thoſe of the gazelle and kevel, but it is much larger. This horn is alſo engraven by Aldrovandus *. Its thickneſs and length ſeem to in-

* Lib. i. de biſulcis, cap. xxi.

dicate

dicate an animal of greater magnitude than the common antilope; and I imagine it belongs to an antilope called *tzeiran* by the Turks, and *ahu* by the Perſians. This animal, ſays Olearius *, has ſome reſemblance to the fallow-deer, except that it is reddiſh, inſtead of yellow; that its horns have no antlers, and lie on the back, &c. According to Gmelin †, who mentions this

* We ſaw daily great numbers of a ſpecies of ſtag, called *tzeiran* by the Turks, and *ahu* by the Perſians. They had ſome reſemblance to our fallow-deer; but they were rather reddiſh than yellow, and their horns want antlers, and lie on the back. They are exceedingly ſwift, and are only found, according to our information, in the province of Mokau, and in the neighbourhood of Scamachia, Karraback, and Merragé; *Relation d'Olearius, tom.* i. *p.* 413.

† I was ſhewn a kind of deer, called *dſheren* in the language of the country. It reſembles the roebuck, except that it had the horns of a wild he-goat, which never fall off. What is ſingular in this animal is, that, in proportion as his horns grow, the ſize of the *larynx*, or *pomum Adami*, augments; ſo that, when old, he has a conſiderable ſwelling on his throat. Dr. Meſſerſchmid aſſerts that this roebuck has an abſolute averſion to water. But the inhabitants of Tongus aſſured me, that, when hunted, he often takes to the water, in order to make his eſcape; and Brigadier Bucholz, at Selenginſck, told me, that he had tamed one completely; that it followed his ſervant when ſwimming; and that it often went to an iſland in the river Selinga, which it never would have done, if it had a natural averſion to water. Theſe roebucks are as ſwift as the ſaigas on the borders of the Irtis; *Voyage de M. Gmelin en Siberie, tom.* ii. *p.* 103.—M. Gmelin has ſince given a more complete deſcription of this animal, in the New Peterſburg Memoirs, under the appellation of *Caprea Campeſtris gutturoſa*, of which the following is an abridgment:—This animal reſembles the roebuck in figure, ſize, colour, and manner of going. . . It has

this animal under the name of *dſheren*, it reſembles the roebuck, except in its horns, which, like thoſe of the wild he-goat, are hollow, and never fall off. This author adds, that, in proportion as the horns grow, the cartillage of the larynx enlarges, and forms a conſiderable prominence when the animal is old. According to Koempfer *, the figure of the *abu* differs not from

has no cutting teeth in the upper jaw. The male differs from the female by having horns and a protuberance on the throat. The horns are ſomewhat compreſſed at the baſe. They have rings for a great part of their length; they are ſmooth at the points; and they are blackiſh, but perfectly black at the extremities. They are permanent, and ſhed not, like thoſe of the roebuck. . . . Upon the throat of the male, there is a large protuberance of five inches in length, and three in breadth: It is ſmaller when the animals are young, and it is not perceptible till they are near a year old. Its growth keeps pace with that of the horns. . . This protuberance is occaſioned by the ſtructure of the larynx and the orifice of the trachea, which are very large. . . The female is perfectly ſimilar to the female roe. . . . This animal differs from the *ibex imberbis*, or *ſaiga*. The noſe of the ſaiga is large and ſplit like that of the ram; but the noſe of this animal is entire and pointed, like that of the roebuck. . . . . The Monguls, and even the Ruſſians, call the male *dſeren*, and the female *ona*, &c.; *Nov. Comment. Acad. Petropol. tom.* v. *p.* 347.—The ſecretary to the Peterſburg Academy adds, that, in the manuſcripts of Meſſerſchmid, this animal is mentioned under the names of *ohna*, *dſeren*, and *ſcharchoeſchi*; *Id. p.* 36.

* Ipſum animal (*abu*) a cervis nihil habet diſſimile præter barbam, et cornua non ramoſa quibus ſe caprino generi adſociat; cornua ſunt ſimplicia, atra, rotundis annulis ultra mediam uſque longitudinem diſtincta, levia et quaſi ad modulum tornata; in mari quidem ſurrecta, pedalis longitudinis, in medio levi arcu disjuncta, faſtigiis rectis mutuo utcunque imminentibus;

from that of the ſtag: But he approaches to the goats by his horns, which are ſimple, black, and encircled with rings, for more than one half of their length, &c.

Some other travellers * have likewiſe mentioned this ſpecies of antilope under the name of *geiran* or *jairan*, which, as well as *dſheren*, may be eaſily referred to the original name *tzeiran*. This antilope is common in South Tartary, in Perſia, and ſeems alſo to be found in the Eaſt Indies †.

To theſe four ſpecies or races of antilopes, we may add other two, which have a great reſemblance to them. The firſt is called *koba* ‡ in Senegal,

tibus; in fœmina vero præparva vel nulla; *Koempfer, Amœnitates, p.* 404.—*Note,* The deſcriptions here given by Koempfer of the *paſen* and *ahu*, correſpond not with the figures.

* Upon the rout from Tauris to Kom, we ſaw a kind of wild animals, whoſe fleſh was good, and the Perſians called them *geirans* or *garzelles*; *Voyage de Gemelli Careri, tom.* ii. *p.* 63. ——In the deſerts of Meſopotamia, there are vaſt numbers of antilopes, which the Turks call *jairain*; *Voyage de la Boullaye-le-Gouz, p.* 247.

† In the foreſts of Guzarat, every kind of game, or veniſon, abounds, particularly fallow-deer, roebucks, *ahus,* and wild aſſes; *Voyage de Mandelſlo, tom.* ii. *p.* 195.

‡ The horns of the koba, or Senegal antilope, are almoſt cloſe at the baſe, and bend out greatly a little above; they approach again towards the ends, and recede from each other towards the points which bend backwards. The diſtance in the middle is ſix inches and a half, above that, four inches, at the points ſix. The length of the horns is ſeventeen inches, and the circumference at the bottom eight. They are ſurrounded with fifteen prominent rings, and the ends are ſmooth and ſharp.

 The

Senegal, where the French give it the denomination of the *great brown cow*. The ſecond, which we ſhall call *kob* *, is alſo a native of Senegal, and called the *ſmall brown cow* by the French. The horns of the kob have a great reſemblance to thoſe of the gazelle and kevel. But the form of the head is different; the muzzle is longer, and there are no pits under the eyes. The koba is much larger than the kob. The latter is about the ſize of a fallow-deer; and the former is as large as the ſtag. From the information of M. Adanſon, it appears, that the koba is five feet long from the extremity of the muzzle to the origin of the tail; that the head is fifteen inches long, the ears nine, and the horns from nineteen to twenty; and that the horns are compreſſed on the ſides, and ſurrounded with eleven or twelve rings; whilſt thoſe of the kob have only eight or nine rings, and exceed not a foot in length.

The head is large and clumſey, being eighteen inches in length; the ears are ſeven inches long. The head and body are of a light reddiſh brown. Down the hind part of the neck, there is a narrow black liſt. The rump is a dirty white. On each knee, and above the fetlock, there is a duſky mark. The hoofs are ſmall. The tail is a foot long, covered with coarſe black hairs, which hang far beyond the end. The length of the whole ſkin, which I bought at Amſterdam, was ſeven feet; *Pennant's Synopſ. of Quad. p.* 38.

* The horns of the *kob*, or Gambian antilope, are thirteen inches long, five inches and a half round at the bottom, very diſtant in the middle, and pretty cloſe at the baſe and points. They are ſurrounded with eight or nine rings, and are ſmooth at their upper part; *Pennant's Synopſ. of Quad. p.* 39.

The

The ſeventh antilope is found in the Levant, and ſtill more commonly in Egypt * and in Arabia. We ſhall call it by its Arabian name, *algazel* †. The figure of this animal is nearly the ſame with that of the other antilopes, and it is about the ſize of the fallow-deer. But its

* Gazella Indica cornibus rectis, longiſſimis, nigris, prope caput tantum annulatis; cornua tres propemodum pedes longa, recta, prope imum ſeu baſin tantum circulis ſeu annulis eminentibus cincta, reliqua parte tota glabra et nigricantia. Animal ipſum ad cervi platycerotis, *Damæ* vulgo dicti, magnitudinem accedit, pilo cinereo, cauda pedem circiter longa, pilis longis innaſcentibus hirta. Hæc *D. Tancred Robinſon*, e pelle animalis ſuffulta in regiæ ſocietatis muſeo ſuſpenſa. Cæterum hujus animalis cornua pluries vidimus in muſeis curioſorum; *Raii Syn. Quad. p.* 79. *Note*, Naturaliſts have improperly applied the appellation of *Indian antilope* to this ſpecies. It will afterwards appear, from the evidence of travellers, that it is only found in Egypt, Arabia, and the Levant.

Gazellæ quibus Egyptus abundat; *Proſper Alp. Hiſt. Egypt. p.* 232.

† The bezoar antilope has very long, ſlender, upright horns, bending at the upper part inward towards each other; ſome of them are much annulated, others ſmoother. It is of the ſize of a goat, and is red, mixed with aſh-colour. It inhabits the inhoſpitable and rough mountains of Laar in Perſia, and is one of the animals which produce the bezoar; *Pennant's Synopſ. of Quad. p.* 26.

Paſen, capricerva; *Koempfer, Amæn. Exot. p.* 398.

Cornu ignotum; *Geſner. Quad. p.* 309.

La gazelle; *Belon. Obſerv. p.* 120.; *Alpin. Hiſt. Egypt. tom.* i. *p.* 232. *tab.* xiv.

Animal bezoarticum; *Raii Synopſ. Quad. p.* 80.

La gazelle du bezoar; *Briſſon, Quad. p.* 54.

Capra bezoartica, cornibus teretibus, arcuatis, totis annularibus, gula barbata; *Linn. Syſt. Nat. p.* 96.

horns are very long, pretty thin, and they bend little till toward their extremities. They are black and almoſt ſmooth, the rings being very ſlight, except near the baſe, where they are better marked. They are near three feet in length, while thoſe of the gazelle or common antilope exceed not one foot; thoſe of the kevel are fourteen or fifteen inches; and thoſe of the corine are only ſix or ſeven inches.

The eighth animal is commonly called the *bezoar antilope* *; and it is denominated *paſon* by the eaſtern nations, which laſt name we ſhall preſerve. The horns of this antilope are very well repreſented in the German Ephemerides †, and

* The Egyptian antilope has ſtraight ſlender horns, near three feet long, and annulated. At their baſe, there is a triangular black ſpot, bounded on each ſide with white. A black line extends from the neck to the loins. The neck, back, and ſides, are of a dark gray colour. The breaſt and belly are white. The tail is about two feet long, terminated with black hairs. The length of the whole ſkin is ſix feet; *Pennant's Synopſ. of Quad. p.* 25.

Gazella Indica cornibus rectis, longiſſimis, nigris, prope caput tantum annulatis; *Raii Synopſ. Quad. p.* 79.

Capra gazella, cornibus teretibus, rectiſſimis, longiſſimis, baſi annulatis; *Linn. Syſt. Nat. p.* 96.

La gazelle des Indes; *Briſſon. Quad. p.* 43.

† Miſſum mihi Hamburgo his diebus fuit ab amico — Schellamero —— cornu —— capri Bezoardici. —— Longitudine et facie qua hic depingitur, durum ac rigidum, fibris rectis per longitudinem cornu excurrentibus tanquam callis (neſcio an ætatis indicibus) ad medium circiter, ubi ſenſum elangueſcunt quaſi, aut planiores redduntur, exaſperatum; intus cavum, pendens uncias octo cum duabus drachmis. ——

Jacobus

and the figure of it is given by Koempfer*. But, in this figure, the horns are neither ſufficiently long nor ſtraight. Beſides, his deſcription is by no means exact; for he ſays that this bezoar animal has a beard like the he-goat, though he has given it no beard in his figure; which is more conſonant to truth, the want of a beard being the chief characteriſtic by which the antilopes are diſtinguiſhed from the goats. This antilope is of the ſize of our domeſtic he-goat, and it reſembles the ſtag in figure, colour, and agility. Beſides two ſeparate horns, we have ſeen a head of this animal to which the horns were attached. The horns engraven in Aldrovandus's work have a great reſemblance to thoſe of the paſan. In general, the algazel and paſan ſeem to be very near allied. They likewiſe belong to the ſame climate, and are found in the Levant, Egypt, Perſia, Arabia, &c. But the algazel inhabits the plains, and the paſan the mountains. The fleſh of both is excellent.

The ninth antilope is an animal, which, according to M. Adanſon, is called *nangueur* or *nanguer*

Jacobus Bontius (lib. i, de med. Indorum, notis ad cap. 45.). Videtur figuræ Bezoardici cornu mei propius accedere dum ita ſcribit: 'Capræ iſtæ non abſimiles valde ſunt capris 'Europæis, niſi quod habeant erecta ac longiora cornua,' &c. De cornu capri Bezoardici; *Obſ. Jo. Dan. Majoris Ephemer. ann.* 8.

* Koempfer, Amœnitates, p. 398.——In Perſia, this kind of antilope is very numerous, and is called *bazan*, and the ſtone itſelf *bazar*; *Voyage de la Compagnie des Indes de Hollande, tom.* ii. *p.* 121.

guer in Senegal *. It is three feet and a half in length, and two feet and a half in height. It is of the figure and colour of a roebuck, being yellow on the upper part of the body, white on the belly and thighs, with a white ſpot under the neck. Its horns are permanent, like thoſe of the other antilopes, and they exceed not ſix or ſeven inches in length. They are black and round; but, what is ſingular, they bend forward at the points nearly in the ſame manner as thoſe of the chamois goat bend backward. The nanguer, or ſwift antilope, is a very handſome animal, and eaſily tamed. All theſe characters, and chiefly that of the horns bending forward, incline me to think that the nanguer may be the *dama* or fallow-deer of the ancients. ‘ Cornua ‘ rupicapris in dorſum adunca, damis in adver‘ ſum,’ ſays Pliny †. Now, the nanguers are the only animals whoſe horns are bended in this manner; we may therefore preſume, that the nanguer of Africa is the dama of the ancients, eſpecially as we learn from another paſſage of

* The *Swift* antilope has round horns, eight inches long, and reverted at their ends. The length of the animal is three feet ten inches, the height two feet eight inches. The general colour is tawny. The belly, lower part of the ſides, rump, and thighs, are white. On the fore part of the neck, there is a white ſpot. But this ſpecies varies in colour.

Dama; *Plinii, lib.* xi. *c.* 37.
Cemas; *Elian, An. lib.* xiv. *c.* 14.
Antilope dama; *Pallas Miſcell.* v. *ſpicil.* 8.

† Hiſt. Nat. lib. xi. cap. 37.

Pliny,

Pliny*, that the dama was found only in Africa. In fine, from the teſtimony of other ancient authors †, we ſee that the dama was a timid, gentle animal, and had no other reſources but in the ſwiftneſs of its courſe. The animal deſcribed and engraven by Caius, under the name of *dama Plinii*, being found, according to the teſtimony of the ſame author, in the North of Great Britain and in Spain, could not be the dama of Pliny, ſince he tells us, that it was only to be met with in Africa ‡. Beſides, the animal drawn by Caius has a beard like a goat; but none of the ancients mention the dama as having a beard. Hence I am led to think, that the dama deſcribed by Caius is only a goat, whoſe horns being a little bended at the points, like thoſe of the common antilope, made him imagine it to be the dama of the ancients. Beſides, the horns bended forward, which is the diſtinguiſhing character of the dama of the ancients, are well marked in the nanguer of Africa only. We are likewiſe informed by M. Adanſon, that there are three

* Sunt et damæ, et pygargi, et ſtrepſicerotes.——Hæc tranſmarini ſitus mittunt; *Hiſt. Nat. lib.* viii. *cap.* 53.

† Horace, Virgil, Martial, &c.

‡ Hæc icon damæ eſt quam ex caprarum genere indicat pilus, aruncus, figura corporis atque cornua, niſi quod his in adverſum adunca, cum cæteris in averſum acta ſint. Capræ magnitudine eſt dama et colore Dorcadis.——Eſt amicus quidam meus Anglus, qui mihi certa fide retulit in partibus Britanniæ ſeptentrionalibus eam reperiri, ſed adventitiam. Vidit is apud nobilem quemdam cui dono dabatur; accepi a quibuſdam eam in Hiſpania naſci; *Caius et Geſner, Hiſt. Quad. p.* 306.

varieties of thoſe nanguers, which differ only in colour; but all their horns are more or leſs bended forward.

The tenth gazelle is an animal very common in Barbary and Mauritania, and is called *the antilope** by the Britiſh, which name I ſhall preſerve. It is of the ſize of our largeſt roebucks. Though it has a great reſemblance to the gazelle and kevel, yet it differs in ſo many characters, that it ought to be regarded as a diſtinct ſpecies. The pits below the eyes are larger in the *antilope* than in the gazelle. Its horns are almoſt fourteen inches long; and, though they nearly touch at the baſe, yet their points are fifteen or ſixteen inches aſunder. They are ſurrounded with rings and half rings, which are

* The *common antilope* has upright horns, twiſted ſpirally, and ſurrounded almoſt to the top with prominent rings: They are about ſixteen inches long, and twelve inches diſtant between point and point. In ſize, it is rather leſs than the fallow-deer or buck. The colour is brown mixed with red, and duſky. The belly and inſide of the thighs are white. The tail is ſhort, black above, and white beneath. The females want horns; *Pennant's Synopſ. of Quad. p.* 32.

Strepſiceros; *Plinii Hiſt. Nat. lib.* viii. *c.* 53. *& lib.* xi. *c.* 37.

Gazelle; *Mem. pour ſervir à l'Hiſt. des Animaux, part.* i. *p.* 95. *fig.* 11.

Gazella Africana, the antilope; *Raii Synopſ. Quad. p.* 79.

Hircus cornibus teretibus, dimidiato annulatis, bis arcuatis; *Briſſon. Quad. p.* 44.

Tragus ſtrepſiceros; *Klein. Quad. p.* 18.

Capra cervicapra, cornibus teretibus, dimiato-annulatis, flexuoſis, contortis; *Linn. Syſt. Nat. p.* 96.

Antilope cervicapra; *Pallas Miſcell. p.* 9. *ſpicil.* 18. *tab.* 1 & 2.

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lefs raifed than thofe of the gazelle and kevel; and, what is peculiar to the *antilope*, its horns have a remarkably beautiful double flexion, which gives them the appearance of the ancient lyre. The hair of the *antilope*, like that of the other gazelles, is yellow on the back, and white on the belly: But thefe two colours are not feparated below the flanks by a brown or black band, as in the gazelle, kevel, corine, &c. We have only a fkeleton of this animal in the royal cabinet.

In the *antilope*, as well as the other gazelles, there feem to be different races. 1. In the royal cabinet, there is a horn which can only be attributed to an antilope of a much larger fize than that we have been defcribing. We fhall adopt the name *lidmée**, which, according to Dr Shaw †, the Africans apply to the *antilopes*. 2. We have feen in the cabinet of the Marquis de Marigny, whofe tafte extends both to the fine arts and to the hiftory of Nature, a kind of

* The lidmée, or brown antilope, is lefs than a roebuck; its horns refemble thofe of the laft. Its face, back, and fides, are of a very deep brown, the laft bordered with tawny. The belly and infide of the legs are white. Above each hoof, there is a black fpot. The tail is black above, and white beneath; *Pennant's Synopf. of Quad. p.* 32.

† Befides the common gazelle or antilope, (which is well known in Europe,) this country likewife produceth another fpecies, of the fame fhape and colour, though of the bignefs of our roebuck, and with horns fometimes of two feet long. This the Africans call *lidmée*, and may, I prefume, be the *ftrepficeros* and *adace* of the ancients; *Shaw's Travels, p.* 243.

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offenſive weapon, compoſed of two ſharp horns, about a foot and a half long, which, from their double flexion, appear to belong to an *antilope* ſmaller than the others*. It muſt be very common in India; for the prieſts † carry this kind of weapon as a mark of dignity. We ſhall call it the *Indian antilope*, becauſe it appears to be only a ſimple variety of the African ſpecies.

Thus, among the gazelles or antilopes, we have diſcovered twelve ſpecies, or diſtinct varieties. 1. The common gazelle; 2. The kevel; 3. The corine; 4. The tzeiran; 5. The koba, or great brown cow; 6. The kob, or ſmall brown cow; 7. The algazel, or Egyptian antilope; 8. The paſan, or pretended bezoar animal; 9. The nanguer, or dama of the ancients; 10. The *antilope*; 11. The lidmée; 12. The Indian *antilope*. After a careful compariſon of theſe twelve animals among them-

* Mr. Pennant calls this the *ſmooth-horned antilope*; *Synopſ. of Quad. p.* 33.

† The Indian antilopes are not entirely like thoſe of other countries. They have more ſpirit; and are diſtinguiſhable by their horns. In the common antilopes, the horns are gray, and not half ſo long as thoſe of India, which are black, and more than a foot and a half in length. They are twiſted as far as the points, like a ſcrew. The Faquirs and Santons generally carry two of them joined together in a parallel direction, and uſe them as ſmall batons; *Relat. du Voyage de Thevenot, tom.* iii. *p.* 111.—Thoſe in the Marquis de Marigny's cabinet are neither twiſted nor annulated: They ſeem to have been poliſhed from one end to the other.

ſelves,

ſelves, we are led to conclude, 1. That the common gazelle, the kevel, and the corine, are only three varieties of the ſame ſpecies; 2. That the tzeiran, koba, and kob, the varieties of another ſpecies; 3. That the algazel and paſan are probably two varieties of the ſame ſpecies; and that the name of *bezoar gazelle*, which has been given to the paſan, is not a diſtinctive character; for I ſhall afterwards prove, that the Oriental bezoar is not produced by the paſan alone, but by all the gazelles and goats which inhabit the mountains of Aſia; 4. That the nanguers, whoſe horns are bended forward, and of which there are two or three varieties, have been pointed out by the ancients under the name of *dama*; 5. That the *antilopes*, which are three or four in number, and differ from all the others by the double flexion of their horns, were likewiſe known to the ancients, and mentioned under the names of *ſtrepſiceros** and *addax*. All theſe animals are found in Aſia and Africa. To theſe five principal ſpecies, which contain twelve diſtinct varieties, I will not add two or three other ſpecies of the New World, to which the vague name of *gazelle*, or *antilope*, has been given, though they differ from all thoſe formerly taken notice of. This would be to augment a confuſion which is already too great. In the ſubſequent

* Erecta autem cornua, rugarumque ambitu contorta, et it leve faſtigium exacuta (ut lyras diceres) ſtrepſiceroti, quem addacem Africa appellat; *Plin. Hiſt. Nat. lib.* xi. *cap.* 37.

ſequent article, we ſhall give the hiſtory of theſe American animals under their true names, *mazame*, *temamaçame*, &c. and ſhall here confine ourſelves entirely to the animals of this genus which are found in Africa and Aſia: For the ſame reaſon, we ſhall refer to the following article ſeveral other African and Aſiatic animals, which have been regarded as antilopes or goats, though they appear to be intermediate ſpecies, ſuch as the bubalus, or Barbary cow, the condoma, the guib, the grimm, &c. without including the chevrotains or muſks, which have a great reſemblance to the ſmalleſt goats or antilopes: Of theſe laſt we ſhall likewiſe make a ſeparate article.

It is now eaſy to perceive the difficulty of arranging and diſtinguiſhing all theſe animals, which are thirty in number, ten goats, twelve or thirteen antilopes, three or four bubali, and as many muſks. Many of them were unknown to the naturaliſts, or exhibited in promiſcuous groups; and the whole have been confounded with each other by travellers. This, indeed, is the third time I have written the hiſtory of theſe animals; and, I acknowledge, that the labour overbalanceth the produce. I have the ſatisfaction, however, of having made every poſſible uſe of the knowledge and materials I could acquire.

With regard to the gazelles, from comparing all that has been ſaid of them, both by the ancients

cients and moderns, with our own experience, we find, 1. That the δορκας of Ariſtotle is not the gazelle, but the roebuck; though the ſame word δορκας has been employed by Ælian, not only to denote the wild goats in general, but particularly the Lybian gazelle or Barbary antilope; 2. That the *ſtrepſiceros* of Pliny, or *addax* of the Africans, is the *antilope*; 3. That the *dama* of Pliny is the *nauguer* of Africa, and not our fallow deer, or any other European animal; 4. That the πρoξ of Ariſtotle is the ſame with the Ζορκες of Ælian, and the πλατυκερος of the more modern Greeks; and that the Latins have uſed this word *platyceros* to denote the fallow deer: 'Animalium,' ſays Pliny, quorundam cornua 'in palmas finxit natura, digitoſque emiſit ex 'iis, unde *platycerotas* vocant;' 5. That the πυγαργος of the Greeks is probably the Egyptian or Perſian gazelle, that is, the *algazel* or *paſan*. The word *pygargus* is employed by Ariſtotle ſolely to denote the *white tailed eagle*; and Pliny has uſed the ſame word to denote a quadruped. Now, the etymology of *pygargus* indicates, 1. An animal with white thighs, ſuch as the roebucks, or gazelles; 2. A timid animal; the ancients, imagining that white thighs indicated timidity, aſcribed the intrepidity of Hercules to his having black thighs. But as almoſt all the authors who ſpeak of the *pygargus* as a quadruped, mention likewiſe the roebuck, it is obvious that the name *pygargus* can only apply

to ſome ſpecies of gazelle different from the *dorcas Lybica*, or common gazelle, and from the *ſtrepſiceros* or *antilope*, which are alſo mentioned by the ſame authors. We are therefore led to conclude, that the *pygargus* denotes the algazel or Egyptian gazelle, which muſt have been known to the Greeks as well as the Hebrews; for we find the name *pygargus* applied, in the Septuagint verſion*, to a quadruped which is reckoned among the pure animals whoſe fleſh might be eaten. Hence the Jews eat the *pygargus*, or that ſpecies of gazelle which is moſt common in Egypt and the adjacent countries.

Dr Ruſſel, in his Natural Hiſtory of Aleppo, tells us, that in the neighbourhood of that city, there are two kinds of gazelles; the one, called the *mountain gazelle*, which is the moſt beautiful, and whoſe hair on the neck and back is of a deep brown colour; the other, called *the gazelle of the plains*, which is neither ſo nimble, nor ſo handſome as the firſt, and whoſe hair is of a pale colour. He adds, that theſe animals are ſo ſwift, and run ſo long, that the beſt hounds cannot take them, without the aſſiſtance of a falcon; that, though the gazelles are meager in winter, their fleſh is excellent; that, in ſummer, it is loaded with fat like that of the fallow deer; that thoſe fed in houſes are not ſuch good eating as the wild ones, &c. From the teſtimo-

* Deuteron. chap. xiv.

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nies of Mr. Ruſſel and of Haſſelquiſt *, we learn that the gazelles of Aleppo are not the com-

* Capra cervicapra. *The rock goat.*

This is larger, ſwifter, and wider, than the common rock goat, and can ſcarcely be taken without a falcon. It is met with near Aleppo. I have ſeen a variety of this, which is common in the Eaſt, and the horns appear different; perhaps it is a diſtinct ſpecies. This animal loves the ſmoke of tobacco, and, when caught alive, will approach the pipe of the huntſman, though otherwiſe more timid than any animal. This is perhaps the only creature beſide man, that delights in the ſmell of a poiſonous and ſtinking plant. The Arabians hunt it with a falcon (Falco gentilis, Linn.). I had an excellent opportunity of ſeeing this ſport in Nazareth, in Galilee. An Arab, mounting a ſwift courſer, held the falcon on his hand as huntſmen commonly do: When we eſpied the rock goat, on the top of a mountain, he let looſe the falcon, which flew in a direct line, like an arrow, and attacked the animal, fixing the talons of one of his feet into the cheek of the creature, and the talons of the other into its throat, extending his wings obliquely over the animal; ſpreading one towards one of its ears, and the other to the oppoſite hip. The animal, thus attacked, made a leap twice the height of a man, and freed himſelf from the falcon; but, being wounded, and loſing its ſtrength and ſpeed, it was again attacked by the falcon, which fixed the talons of both its feet into the throat of the animal, and held it faſt, till the huntſman coming up took it alive, and cut its throat, the falcon drinking the blood, as a reward for his labour; and a young falcon which was learning, was likewiſe put to the throat of the goat: By this means are young falcons taught to fix their talons in the throat of the animal, as being the propereſt part; for, ſhould the falcon fix them in the creature's hip, or ſome other part of the body, the huntſman would not only loſe his game, but his falcon alſo: For the animal, rouſed by the wound, which could not prove mortal, would run to the deſerts, and the tops of the mountains, whither its enemy keeping its hold, would be obliged to follow; and being ſeparated from its maſter, muſt of courſe periſh; *Haſſelquiſt, p.* 190.

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mon kind, but the Egyptian gazelles, whoſe horns are upright, long, and black, and whoſe fleſh is extremely good; and that they are half-domeſtic, having been often and very anciently tamed, which, of courſe, has given riſe to a great number of varieties, or different races, as happens in all other domeſtic animals. Theſe Aleppo gazelles, therefore, are the ſame with thoſe we have called *algazelles*. They are ſtill more common in Thebaid and Upper Egypt, than in the environs of Aleppo. They feed upon aromatic herbs, and the buds of trees *. They generally go in flocks, or rather in families, conſiſting of five or ſix †. Their cry is ſimilar to that of the goat. They are not only hunted with hounds, who are aſſiſted by falcons, but by the ſmall ‡ panther,

* Relat. du Voyage fait ou Egypt, par Granger, p. 99.

† In Egypt there are a number of antilopes.——They commonly traverſe the mountains in flocks. The hair and tail of theſe animals reſemble thoſe of the hind; and their fore-feet, which are ſhort, reſemble thoſe of the fallow deer. Their horns are ſtraight as far as the extremity, which is crooked. Their cry reſembles that of the other goats; *Voyages de Paul Lucas, tom.* iii. *p.* 199,

‡ Venantur non minus et gazellas quibus Egyptus abundat, quarum carnes, bonitate et guſtu, capreolorum carnibus ſimiles exiſtunt. Biſulcum animal eſt, ſilveſtre, ſed quod facile manſuefit, capræ ſimile, colore igneo ad pallidum inclinante, duplici cornu, longo, introverſo lunæ modo, et nigro; auribus arrectis, ut in cervis, oculis magnis, oblongis, nigris, pulcherrimis. Unde in adagio apud Egyptos dicitur de pulchris oculis *ain el gazel*, id eſt, oculus gazellæ: Collo longo et gracili,

ther, which we have called *ounce*. In some places, the gazelles are taken by means of tamed

gracili, cruribus gracilibus atque pedibus bisulcis constat. Pantheræ in desertis locis gazellas venantur, quibus aliquandiu cornibus durissimus, acutisque resistant; sed victæ eorum præda fiunt. Pili quibus conteguntur, videntur sane similes iis qui in Moschiferis animalibus spectantur: Pulcherrimum est animal, quod facile hominibus redditur cicur mansuetumque; *Prosper. Alpin. Hist. Nat. Egypt. p.* 232. *tab.* 14. *Note,* From the figure given by Prosper Alpinus, it is obvious, that it is the *algazel* of which he is treating; and his description shows that the algazel is often, as well as the common gazelle and keval, marked with white spots, like the civet. ———In India there are numbers of gazelles, which resemble our fawns. They generally go in separate flocks, each consisting of five or six, and accompanied with a male, who is easily distinguished by his colour. When the hunters discover one of these flocks, they endeavour to point them out to the leopard, which they keep chained in a small cart. This cunning animal does not run straight upon them, but winds about, creeping and concealing himself, in order to approach and surprise them; and, as he is capable of making five or six bounds with inconceivable quickness, when he thinks himself near enough, he darts upon them, tears open the throat and breast, and gluts himself with their blood, heart, and liver. But, if he misses his aim, which often happens, he remains fixed on the spot. It would be in vain to attempt to seize them by running; for they run much swifter and continue much longer than he can do. His master then comes gently up to him, flatters him, and throws pieces of flesh to him. By amusing the animal in this manner, he is enabled to throw a cover over his eyes: After which, he chains him, and replaces him on the cart. In the course of our march, one of these leopards exhibited this sport to us, which alarmed several of our people. A flock of gazelles rose in the midst of the army, and, as often happens, they accidentally passed near the two leopards, which are commonly carried along on a small cart. One of them, which was not hood-winked, made

ed ones, with ſnares of ropes fixed to their horns*.

The antilopes, eſpecially the larger kinds, are much more common in Africa than in India. They are ſtronger and fiercer than the other gazelles; and they are eaſily diſtinguiſhed by the double flexion of their horns, and by the want of a black or brown band below the flanks. The middling antilopes are of the ſize of a fallow deer. Their horns are very black †, their belly pure white, and their fore-legs are ſhorter than the hind-legs. They are very nu-

made ſuch a ſpring, that he broke his chain, and darted after them, but without effect. However, as the gazelles were terrified, and chaſed on all ſides, one of them was again obliged to paſs near the leopard, who, notwithſtanding the whole road was embarraſſed with camels and horſes, and notwithſtanding the common notion that this animal never attacks its prey after having once miſſed it, he ſprung upon and ſeized it; *Relat. de Thevenot, tom.* iii. *p.* 112.

* Inſtead of a leopard, a tamed gazelle is employed to catch the wild ones. Round his horns a rope is twiſted in various directions, and the two ends of it are fixed under his belly. When the hunters diſcover a flock of gazelles, he is allowed to go and join them. But the male of the little flock advances to prevent him: This oppoſition he makes with his horns, which are ſoon entangled in the meſh of ropes. He is then ſeized and carried off by the hunters; *Id. ibid.*——— The ſame art is employed in taking the females. A domeſtic female with a netting of cords is let looſe among a flock. The wild females immediately begin to ſport with her; and the horns of one of them are ſoon entangled; and ſhe falls an eaſy prey to the Indians; *Voyage de la Boullaye-le-Gouze, p.* 247.

† L'Afrique de Marmol, tom. i. p. 53, and Shaw's Travels.

merous

merous in Tremecen, Duguela, Tell, and Zaara. They are cleanly animals, and never lie down but in dry places. They are alſo extremely nimble, vigilant, and timorous. In open places, they look round on all ſides; and, as ſoon as they perceive a man, a dog, or any other enemy, they fly off with full ſpeed. But, notwithſtanding this natural timidity, they have a kind of courage; for, when ſurpriſed, they ſtop ſhort, and face thoſe who attack them.

In general, the eyes of the gazelles are black, large, vivacious, and, at the ſame time, ſo beautiful, that in the Eaſtern nations, they are employed proverbially in praiſing the eyes of a fine woman *. Their limbs are finer and more delicate than thoſe of the roebuck. Their hair is ſhort, ſoft, and luſtrous. Their fore-legs are not ſo long as the hind ones, which enables them, like the hare, to run with greater facility up than down hill. Their ſwiftneſs is equal to that of the roebuck; but the latter rather leaps than runs, whereas all the gazelles run uniformly †. Moſt of them are yellow on the back, and

* In the neighbourhood of Alexandria, the antilopes are very numerous. This animal is a ſpecies of roebuck, whoſe eyes are ſo large, vivacious, and piercing, that they are uſed figuratively in praiſing the eyes of the ladies; *Deſcript. de l'Egypt. par Maillet, tom.* ii. *p.* 125.

† The hair of the *gierans* or *gazelles* is like that of the fallow-deer, and they run, like the dog, without leaping. In the night, they come to feed in the plains, and, in the morning, return to the mountains; *Voyage de Gemelli Carreri, tom.* ii. *p.* 64.

white on the belly, and have a brown band which separates these two colours below the flanks. Their tails are of different lengths, but always garnished with pretty long black hair. Their ears are long, erect, pretty open in the middle, and terminate in a point. Their feet are cloven, and shaped nearly like those of the sheep. Both males and females have permanent horns; but those of the females are thinner and shorter.

These are all the facts we have been able to collect concerning the different species [illegible] zelles, and their natural dispositions a[illegible] ners. We shall now inquire with what p[illegible] ty naturalists have ascribed to one of th[illegible] mals only, the production of the famou[illegible] called the *Oriental bezoar*, and whether this animal be the *pasen* or *pazan*, which they have mentioned specifically under the name of the *bezoar gazelle*. In examining the figures and description * given by Koempfer, who has written much

* Repertus in novenni hirco lapillus voti me fecit quodammodo compotem; dico quodammodo, nam in bestia quam comes meus findebat, intestina, a me ipso diligentissime perquisita, nullum lapidem continebant. Pronior alteri apparebat fortuna qui a nobis longius remotus feram a se transfossam dum me non expectato dissecaret, lapillum reperit elegantissimum, tametsi molis perexiguæ.———Adeptus lapidem, antequam adessem.———*Koempfer, Amænit. p.* 392.———Bezoard orientalis legitimus. Lapis bezoard orientalis verus et pretiosus, Persice Pasahr, ex quo nobis vox bezoard enata est.———Patria ejus præcipua est Persidis provincia Laar.———Ferax præterea Chorasmia esse dicitur.———Genitrix, est fera quædam montana caprini generis

much on this ſubject, it is doubtful whether he means that the pazan or the algazel is the only animal

generis quam incolæ *paſen*, noſtrates capricervam, nominant. ——— Animal pilis brevibus ex cinereo ruſis veſtitur, magnitudine capræ domeſticæ, ejuſdemque *barbatum* caput obtinens. Cornua fœminæ *nulla* ſunt vel exigua, hircus longiora et liberalius extenſa gerit, annuliſque diſtincta inſignioribus, quorum numeri annos ætatis referunt: Annum undecimum vel duodecimum raro exhibere dicuntur, adeoque illum ætatis annum haud excedere. Reliquum corpus a cervina forma, colore, et agilitate nil differt. Timidiſſimum et maxime fugitivum eſt, inhoſpita aſperrimorum montium teſqua incolens, et ex fo- [illegible] ontana in campos rariſſime deſcendens, et quamvis [illegible] ni regiones inhabitet, lapides tamen bezoardicos [illegible] it. *Caſbini* (emporium eſt regionis *Irak*) pro coquina [illegible] pricervam, vel, ut rectius dicam, Hircocervum præ[illegible] venebat venator, qui a me quæſitus, non audiviſſe [illegible] debat beſtiam illic lapidem unquam foviſſe, quod et [illegible] vium, quotquot percunctatus ſum, teſtimonia confirmabant. ——— Quæ vero partes, tametſi capricervas alant promiſcue, non omnes tamen herbas ferunt ex quibus depaſtis lapides generari, atque ii quidem æque nobiles poſſint, ſed ſolus ex earum numero eſt mons Baarſi. ——— Nulla ibi ex prædictis beſtiis datur ætate provecta quæ lapidem non contineat; cum in cæteris hujus jugi partibus (ductorum verba refero) ex denis in montium diſtantioribus, ex quinquagenis in cæteris, extra Larenſem provinciam ex centenis vix una ſit quæ lapide dotetur, eoque ut plurimum exigui valoris. In hircis lapides majores et frequentius inveniuntur quam in fœminis. Lapidem ferre judicantur annoſi, valde macilenti, colla habentes longiora, qui gregem præire geſtiunt. ——— Beſtiæ ut primum perfoſſæ linguam inſpiciunt, quæ ſi ſolito deprehendatur aſperior, de præſente lapide nihil amplius dubitant. Locus natalis eſt pylorus ſive productior quarti quem vocant ventriculi fundus, cujus ad latus plica quædam ſive ſcrobiculus, mucoſo humore oblitus, lapillum ſuggerit: In alia ventriculi claſſe (prout ruminantibus diſtinguuntur) quam ultima hac inveniri negabant. ——— Credunt quos plicarum alveoli non ſatis amplectuntur elabi pyloro poſſe,

animal which produces the *Oriental bezoar* *. If we consult the other naturalists and travellers, we shall be tempted to believe that all the gazelles, wild and domestic goats, and even the sheep, indiscriminately produce this stone, the formation of which depends more, perhaps, on the

posse, et cum excrementis excerni: Quin formatos interdum dissolvi rursus, præsertim longiori animalis inedia. *Clar. Jagerus* mihi testatus est se, dum in regna Golkonda degeret, gazellas vivas recenter captas manu sua perquisivisse, et contracto abdomine lapillos palpasse, in una geminos, in altera quinc.. vel s.. nos. Has ille bestias pro contemplatione sua alere de.. camera hospicii sui inclusas; verum quod ab omni p.. stinerent, quasi perire quàm saginari captivæ mallent, .. eas jussit, inedia aliquot dierum macentes. Tum ver.. ubi exempturus erat eorum ne vestigium amplius inve.. quo illos a jejuno viscere, vel alio quocumque modo, dis.. credebat.——Dissolutionem nullo posse negotio fieri persuadeor, si quidem certum est lapides in loco natali viventis bruti dum latent nondum gaudere petrosa quam nobis exhibent duritie, sed molliores esse et quodammodo friabiles, instar fere vitelli ovi fervente aqua ad duritiem longius excocti. Hoc propter recenter exsectus ne improvide frangatur, vel attrectus nitorem perdat, ab inventoribus consuevit ore recipi, et in eo foveri aliquandiu dum induruerit, mox gossypio involvi et asservari. Asservatio ni primis diebus caute fiant, periculum est ne adhuc cum infirmior, importuna contrectatione, rumpatur aut labem recipiat. Generationem fieri conjiciunt cum resinosa quædam ex herbis depastis concoctisque substantia ventriculorum latera occupat, quæ, egestis cibis, jejunoque viscere in pylorum confluens, circa arreptum calculum, lanam, paleamve consistat et coaguletur; ex primo circa materiam contentam stamine efformandi lapidis figura pendet, &c.; *Idem, p.* 389. *et seq.*

* At Golconda, the king has great store of excellent bezoars. The mountains where the goats feed which produce these

the temperature of the climate, than on the nature or ſpecies of the animal. If we may believe

theſe ſtones are about ſeven or eight days journey from Bagnagaar. They commonly ſell at forty crowns a pound; and the longeſt kind are the beſt. They are likewiſe found in certain cows, which are much larger, though not ſo valuable, as thoſe produced by the goats. The bezoars extracted from a rare kind of apes, which are ſmall and long, are in the higheſt eſtimation; *Voyage de Thevenot, tom.* iii. *p.* 293.—Perſia produces finer bezoar ſtones than any other country of the world. They are extracted from the ſides of certain wild he-goats, to the livers of which they are attached; *Voyage de Feynes, p.* 44.—— The bezoar, that famous medicinal ſtone, ought to be ranked among the number of drugs. It is a tender ſtone, conſiſting of coats or pellicles, like an onion. It is found in the bodies of the wild and domeſtic goats along the gulf of Perſia, in the province of Coraſſon, which is the ancient Margiana, and is incomparably better than that brought from the kingdom of Golconda. But, as the goats were brought from a diſtance of three days journey, we found bezoars in ſome of them only, and even that in ſmall quantities. We preſerved theſe goats alive fifteen days. They were fed with common green herbage; but, upon opening them, nothing was found. I kept them during this time, in order to diſcover whether, as is alleged, it be a particular herb which heats theſe animals, and produces this ſtone in their bodies. We are told by the natives of Perſia, that the more this animal paſtures in parched countries, and eats dry and aromatic herbs, the bezoar is the more ſalutary. Coraſſon and the borders of the Perſian gulf are the drieſt countries in the world. In the heart of theſe ſtones, there are always pieces of brambles, or ſome other vegetable, that ſerve as a nucleus, round which the humour that compoſes this ſtone coagulates. It is worthy of remark, that, in India, the ſhe-goats produce bezoar, and that, in Perſia, it is produced by the wedders and he-goats. The Perſians eſteem their own bezoar, being hotter and better concocted, as four times more valuable than the Indian kind. The former they ſell at fifty-four livres the courag,

lieve Rumphius, Seba, and fome other authors, the true Oriental bezoar proceeds from apes,

rag, which is a weight of three drachms; *Voyage de Chardin, tom.* ii. *p.* 16.——The Oriental bezoar comes from a northern province of the kingdom of Golconda, and is found in the ftomach of the fhe-goats.——The peafants, by feeling the belly of the goat, know how many bezoars fhe has, and fell her in proportion to their number. This number they difcover, by rubbing the fides of the ftomach with their hands in fuch a manner as to bring all the contents towards the middle of it, and then they feel the ftones diftinctly.——The bezoar, like the diamond, is valued according to its fize; for, if five or fix bezoars weigh an ounce, they bring from fifteen to eighteen francs. But, if one bezoar weighs an ounce, it fells at one hundred francs. I fold one of four ounces and a half at two thoufand livres.——The merchants who traffic in bezoars, brought me fix of thefe goats, which I examined. It muft be acknowledged that thefe animals are beautiful, very tall, and have hair as fine as filk.——I was told that one of thefe goats had but one bezoar in its ftomach, and that others had two, three, or four, which I foon perceived to be true, by rubbing their bellies in the manner above defcribed. Thefe fix goats had feventeen bezoars and a half, one of which was about the fize of half a hazel nut. The infide refembled the foft dung of a goat. Thefe ftones grow among the dung in the animal's belly. Some of the natives told me, that the bezoars were attached to the liver, and others, that they were fixed in the heart. From thefe vague affertions, I could not learn the truth.——With regard to the bezoar produced by the ape, it is fo ftrong that two grains of it are reckoned equal to fix of that produced by the goat; but it is very rare, and is found principally in the ifland of Macaffar. This kind of bezoar is round; but the other is of different figures. Thefe bezoars which are fuppofed to come from the apes, are much rarer than the other kind. They are alfo much dearer, and in greater requeft; and, when one is found of the fize of a nut, it fometimes fells at more than a hundred crowns; *Voyage de Tavernier, tom.* iv. *p.* 78.

and not from gazelles, goats, or wedders *. But this notion of Rumphius and Seba is by no

* *De lapidibus bezoard. orientalis.* Nondum certo innotuit, quibusnam in animalibus hi calculi reperiantur; sunt qui statuant, eos in ventriculo certæ caprarum speciei generari (Raius scilicet, Gesnerus, Tavernier, &c.) . . . Rumphius, in *Museo Amboin.* refert Indos in risum effundi audientes, quod Europæi sibi imaginentur, lapides bezoardicos in ventriculis caprarum sylvestrium generari; at contra ipsos affirmare, quod in *Simiis* crescant, nescios interim, quanam in specie simiarum, an in Bavianis dictis, an vero in Cercopithecis. Attamen id certum esse, quod ex *Succadana* et *Tambas*, sitis in insula *Borneo*, adferantur, ibique a monticolis conquisiti vendantur iis qui littus accolunt; hos vero posteriores asserere, quod in certa *Simiarum* vel *Cercopithecorum* specie hi lapides nascantur; addere interim Indos, quod vel ipsi illi monticolæ originem et loco natalia horumce lapidum nondum prope explorata habeant. Sciscitatus sum sæpissime ab illis qui lapides istos ex Indiis Orientalibus huc transferunt, quonam de animali, et quibus e locis, hi proveniant; sed nihil inde certi potui expiscari, neque iis ipsis constabat quidpiam, nisi quod saltem ab aliis acceperant. . . . Novi esse, qui longiusculos inter et sphæricos seu oblongo-rotundos, atque reniformes, dari quid discriminis statuunt. At imaginarium hoc est. Neque enim ulla ratione intrinsecus differunt, quando confringuntur aut in pulverem teruntur, modo fuerint genuini, nec adulterati, sive demum ex simiis aut capris sylvestribus, aliisve proveniant animalibus. . . Gaudent hi lapides nominibus, pro varietate linguarum, variis, Lusitanis, *Pedra* seu *Caliga* de *Buzio*; Sinensibus, *Gautsjo*; Maleitis, *Culiga-Kaka*; Persis, *Pazar*, *Pazan*; seu *Belsahar*; Arabibus, *Albazar* et *Berzuaharth*; Lusitanis Indiæ incolis, *Pedra-Bugia* seu *Lapides-Simiarum*, juxta Koempferi testimonium, vocantur. . . . . . Credibile est nasci eosdem in stomacho, quum plerumque in centro straminum lignorumve particulæ, nuclei, aut lapilli, et alia similia, inveniantur tanquam prima rudimenta circum quæ acris, viscosa materies sese lamellatim applicat, et deinceps, crustæ instar,

no means well founded. We have ſeen ſeveral of theſe concretions, which are called *ape bezoars*. But they are totally different from the Oriental bezoar, which unqueſtionably proceeds from a ruminating animal, and is eaſily diſtinguiſhed, by its form and ſubſtance, from all the other bezoars. Its common colour is a greeniſh olive, and browniſh within. The colour of what is called the *Occidental bezoar*, is a faint yellow, more or leſs dirty. The ſubſtance of the former is more tender and porous, and that of the latter, harder, drier, and more petrified. Beſides, as prodigious quantities of the Oriental bezoar were conſumed during the laſt two or three centuries, being uſed both in Europe and Aſia, in all caſes where our phyſicians now employ cordials and antidotes againſt

inſtar, magis magiſque aucta in lapidem dureſcit. Pro varietate victus, quo utuntur animalia, ipſæ quoque lamellæ variant, ſucceſſive ſibi mutuo adpoſitæ, ſenſimque grandeſcentes. Fracto hæ facile ſeparantur, et per integrum ſæpe ſtatum ita a ſe mutuo ſuccedunt, ut decorticatum relinquant lapidem, lævi iterum et quaſi expolita ſuperficie conſpicuum. Lapides bezoard, illis e locis Indiæ Orientalis venientes quibus cum Britannis commercium intercedit, pro parte minuti ſunt, et rotundi, ſilicumque quandam ſpeciem in centro gerunt. Alii vero teneriores, et oblongi, intus continent ſtraminula, nucleos dactylorum, ſemina peponum, et ejuſmodi, quibus ſimplex ſaltem, aut geminum veri lapidis ſtratum, ſatis tenue, circumpoſitum eſt. Unde in his ultra dimidiam partem rejiculi datur: Et nobis quidem hi videntur veri eſſe ſimiarum lapides, utpote maturius ab hiſce animantibus per anum excreti, quam ut majorem in molem potuerint excreſcere; *Seba, vol.* ii. *p.* 130.

poiſon,

poiſon, may we not preſume, from this great conſumption, which ſtill continues in ſome degree, that the bezoar proceeds from a very common animal, or rather, that it proceeds not from one, but from ſeveral ſpecies; and that it is equally extracted from gazelles, goats, and wedders; but that theſe animals can only produce it in the climates of India and the Levant?

From all that has been written on this ſubject, we have not been able to find one diſtinct obſervation, nor a ſingle deciſive argument. It only appears, from what has been ſaid by Monard, Garcias, Cluſius, Aldrovandus, Hernandes, &c. that the Oriental bezoar animal is not the common domeſtic goat, but a ſpecies of wild goat, which they have not ſufficiently characteriſed. In the ſame manner, all we can collect from Koempfer is, that the bezoar animal is a kind of wild goat, or rather gazelle, which is equally ill deſcribed. But, from the teſtimonies of Thevenot, Chardin, and Tavernier, we learn, that this ſtone is not ſo often extracted from the gazelles, as from the wedders, and the wild or domeſtic goats. Theſe travellers merit the greater credit, becauſe they were eye-witneſſes to the facts they mention, and becauſe, when treating of the bezoar, though they take no notice of the gazelles, yet, as they are well acquainted with theſe animals, and mention them in other parts of their works *, there is not the leaſt appearance

* Voyage de Tavernier, tom. ii. p. 26.

of

of their having been deceived. We muſt not, therefore, conclude, like our ancient naturaliſts, that the oriental bezoar is produced ſolely by a particular ſpecies of gazelle. I acknowledge, that, after having examined not only the evidence of travellers, but the facts themſelves which might decide this queſtion, I am inclined to believe that the bezoar ſtone proceeds equally from the moſt part of ruminating animals, but more commonly from goats and gazelles. It is formed of concentric coats or ſtrata, and frequently contains foreign ſubſtances in its centre. I endeavoured to inveſtigate the nature of theſe ſubſtances, which ſerve as a nucleus to the bezoar, in order to diſcover the animal that ſwallowed them. In the centre of theſe ſtones, I found ſmall flints, ſtones of plums, and of tamarinds, ſeeds of caſſia, and eſpecially pieces of ſtraw, and buds of trees. Hence I could no longer heſitate in attributing this production to animals which browſe herbage and leaves.

We are perſuaded, therefore, that the Oriental bezoar proceeds not from any one, but from a number of different animals. Neither is it difficult to reconcile this opinion with the teſtimonies of travellers; for, though each of them contradicts his neighbour, yet all of them make near approaches to the truth. The bezoar was unknown to the ancient Greeks and Latins. Galen is the firſt who mentions its virtues againſt poiſon. The Arabians ſpeak of the be-

zoar

zoar as poſſeſſing the ſame virtues. But neither the Greeks, Latins, nor Arabians, give any preciſe information concerning the animals by which it is produced. Rabi Moſes, the Egyptian, only remarks, that ſome people pretend that this ſtone is formed in the angle of the eye, and others in the gall-bladder of the eaſtern wedders. Now, bezoars, or concretions, are actually formed in the angles of the eyes, and in the pits below the eyes of ſtags and ſome other animals. But theſe concretions are very different from the oriental bezoar; and all the concretions in the gall-bladder conſiſt of a light, oily, and inflammable matter, which has no reſemblance to the ſubſtance of the bezoar. Andreas Lacuna, a Spaniſh phyſician, in his commentaries on Dioſcorides, remarks, that the oriental bezoar is extracted from a certain ſpecies of wild goat, in the mountains of Perſia. Amatus Luſitanus repeats Lacuna's remark; and adds, that this mountain-goat reſembles the ſtag. Monard, who quotes all the three, aſſures us in a more poſitive manner, that this ſtone is derived from the internal parts of a mountain-goat in India, to which, ſays he, I may give the appellation of *cervi-capra*; becauſe it partakes both of the ſtag and the goat, is nearly of the ſize and figure of the ſtag, and, like the goat, has ſimple horns, very much bended backward*. Garcias ab Horto

* Lapis *bezaar* varias habet appellationes; nam Arabibus *bazar* dicitur, Perſis *bezaar*, Indis *bezar*. . . . Iſte lapis in internis

Horto tells us, that, in Coraſſon and in Perſia, there is a ſpecies of he-goats *, called *pa-ſan;*

ternis partibus cujuſdam animalis *capra montana* apellati generatur. . . . . In Indiæ ſupra Gangem certis montibus. Sinarum regioni vicinis, animalia cervis valde ſimilia reperiuntur, tum magnitudine, tum agilitate et aliis notis, exceptis quibuſdam partibus quibus cum capris magis conveniunt, ut cornibus quæ veluti capræ in dorſum reflexa habent et corporis forma, unde nomen illis inditum cervicapræ, propter partes quas cum capris et cervis ſimiles obtinent. . . . Eſt autem animal (ex eorum relatu qui ex illa regione redeuntes animal conſpexerunt) in quo reperiuntur iſti lapides, cervi magnitudine et ejus quaſi formæ; binis dumtaxat cornibus præditum, latis et extremo mucronatis atque in dorſum valde recurvis, breves pilos habens cineracei coloris ceu admixta rufedo: In iiſdem montibus aliorum etiam colorum reperiuntur. Indi vel laqueis vel decipulis illa venantur et mactant. Adeo autem ferocia ſunt ut interdum Indos etiam occidant, agilia præterea et ad ſaltum prona: In antris vivunt gregatimque eunt; utriuſque ſexus mares ſcilicet et fœminæ inveniuntur, vocemque gemebundam edunt. Lapides autem ex interioribus inteſtinis aliiſque cavis corporis partibus educuntur. . . . Dum hæc ſcriberem quoddam animal conſpectu ivi huic (ni fallor) ſimile, quia omnes notas mihi habere videbatur quibus modo deſcripta prædita ſunt; eſt autem ex longinquis regionibus per Africam Generoſo Archidiacono Nebienſi delatum: Magnitudine ſervi, capite et ore cervino, agile inſtar cervi, pili et color cervo ſimiles; corporis forma capra refert, nam magno hirco ſimile eſt, hircinos pedes habens et bina cornua in dorſum inflexa, extrema parte contorta ut hircina videantur, reliquis autem partibus cervum æmulatur. Illud autem valde admirandum quod ex turre ſe præcipitans in cornua cadat ſine ulla noxa: Veſcitur herbis, pane, leguminibus, omnibuſque cibis quæ illi præbentur: Robuſtum eſt et ferrea catena vinctum, quia omnes funes quibus ligabatur rodebat et rumpebat; *Nic. Monardi de Lapide Bezoar. lib. interprete Carolo Cluſio.*

* Eſt in Coraſone et Perſia Hirci quoddam genus, quod *pazan* lingua Perſica vocant, rufi aut alterius coloris (ego ruſum

*ſan**; that the oriental bezoar is generated in their ſtomachs; that this ſtone is found, not only in Perſia, but likewiſe in Malacca, and in the Iſland of Cows near Cape Comorin; and that, in great numbers of theſe goats, ſlain for the ſubſiſtence of the troops, theſe ſtones were very commonly found. On this ſubject, Chriſtopher Acoſta † repeats what had been ſaid by Garcias and Monard, without offering any thing new. In fine,

ſum et prægrandem Goæ vidi) mediocri altitudine, in cujus ventriculo fit hic lapis bezar. . . . Cæterum non ſolum generatur hic lapis in Perſia, ſed etiam nonnullis Malacæ locis, et in inſula quæ a Vaccis nomen ſumpſit, haud procul a promontorio Comorim. Nam cum *in exercitus annonam mactarentur iſtic multi prægrandes hirci, in eorum ventriculis magna ex parte hi lapides reperti ſunt.* Hinc factum eſt, ut quotquot ab eo tempore in hanc inſulam appellant, hircos obtruncent, lapideſque ex iis tollant. Verum nulli Perſicis bonitate comparari poſſunt. Dextri autem adeo ſunt Mauritani, ut facile qua in regione nati ſint ſinguli lapides, diſcernere et dijudicare poſſint. . . . Vocatur autem hic lapis *pazar* a *pazan*, id eſt, hircorum Arabibus, tum Perſis et Coraſone incolis: Nos corrupto nomine *bezar*, atque Indi magis corrupti *bazar* appellant, quaſi dicas lapidem forenſem: Nam *bazar* eorum lingua forum eſt; *Garcias ab Horto, Aromat. Hiſt. interprete Carolo Cluſio, p.* 216.

* Koempfer ſeems to have borrowed from Monard and Garcias, the names *cervi-capra, capri-cerva*, and *paſan*, which he has given to the oriental bezoar animal.

† Generatur iſte lapis in ventriculis animalium hirco fere ſimilium, arietis prægrandis magnitudine, colore rufo, uti cervi propemodum agili, et acutiſſimi auditus, a Perſis *pazan* apellato, quod variis Indiæ provinciis, uti in promontorio Comorim, et nonnullis Malacæ locis, tum etiam in Perſia et Coraſone, inſuliſque quæ a Vacca cognomen adeptæ ſunt, invenitur:— *Chriſtophori Acoſta, Aromat. liber, cap.* XXXVI. *interprete Carolo Cluſio, p.* 279.

to omit nothing relative to the hiſtory of this ſtone, Koempfer, an intelligent man, and an exact obſerver, tells us, that, when in the province of Laar in Perſia, he went with the natives of the country to hunt the buck *paſan*, which produces the bezoar, and that he ſaw the ſtone extracted; and he aſſures us, that the true oriental bezoar proceeds from this animal; that the buck *ahu*, of which he alſo gives a figure, likewiſe produces bezoar, but that it is of an inferior quality. From the figures he has given of the paſan and ahu, we would be induced to think, that the firſt repreſents the common gazelle rather than the true paſan; and, from his deſcription, we ſhould imagine his paſan to be a he-goat, and not a gazelle, becauſe he has given it a beard like the goats. Laſtly, from the name *ahu*, which he gives to his other buck, as well as from his ſecond figure, we recogniſe the wild he-goat rather than the genuine ahu, which is our tzeiran or large gazelle. What is ſtill more ſingular, Koempfer, who ſeems willing to determine the ſpecies of the oriental bezoar animal, and who aſſures us that it is the wild buck called *paſan*, quotes, at the ſame time, a man who, he ſays, is very worthy of credit, and who affirms, that he felt the bezoars in the belly of the gazelle, at Golconda. Thus all the poſitive evidence which can be derived from Koempfer is reduced to this, that there are two ſpecies of wild mountain-goats, the

the pasan and ahu, which produce the bezoar in Persia, and that in India this stone is likewise found in the gazelles. Chardin remarks, that the oriental bezoar is found in the bucks and she-goats, both wild and domestic, along the Persic Gulf, and in several provinces of India; but that, in Persia, it is also extracted from the wedders. The Dutch travellers also assert *, that it is produced in the stomachs of sheep and goats. Tavernier, who is still more positive in favour of the domestic goats, says, that their hair is as fine as silk, and that, having purchased six of these goats alive, he extracted from them seventeen entire bezoars, and a piece of another as large as half a filberd nut. He then adds, that there are other bezoars supposed to proceed from apes, whose virtues are still stronger than those of the goat-bezoars; that they are also extracted from cows; but the virtues of these are inferior, &c. What can be inferred from this variety of evidence and opinions, unless it be allowed that the

* In the island of Bosner, we find the famous bezoar stone, which is very precious and in great request, on account of its virtue against poison. It is formed, in the stomachs of sheep or goats, round a small pustule or protuberance in the middle of the stomach, and which is found in the stone itself. . . . A conjecture has been formed, that the bezoar which proceeds from the stomach of the sheep, and the gall-bladder stone of the hog, are produced by the operation of some particular herbs eaten by these animals. But they are found in all the countries of the East Indies, though these animals feed promiscuously upon herbage of every kind. *See Voyage de la Compagn. des Indes de Hollande, tom.* ii. *p.* 121. and also *Le Voyage de Mandelslo, tom.* ii. *p.* 364.

oriental

oriental bezoar proceeds not from one ſpecies, but from a number of different animals, and eſpecially from the gazelles and goats?

With regard to the occidental bezoars, we heſitate not to pronounce, that they are produced neither by goats nor gazelles; for it will be ſhown, in the ſubſequent articles, that there are neither goats, gazelles, nor even any animal which approaches to this genus, throughout the whole extent of the New World. Inſtead of gazelles, we find roebucks alone in the woods of America; inſtead of wild goats and ſheep, lamas and pacos*, animals totally different, are to be found in the mountains of Peru and Chili. The ancient Peruvians had no other cattle; and, at the ſame time that theſe two ſpecies were partly reduced to a domeſtic ſtate, they exiſted, in ſtill greater numbers, in their natural condition of liberty on the mountains. The wild lamas were called *huanacus*, and the pacos *vicunnas*, from which has been derived the name *vigogne*, that denotes the ſame animal with the pacos. Both the lamas and the pacos produce bezoars; but the domeſtic kind produce them more rarely than the wild.

M. Daubenton, who has inveſtigated the nature of bezoar ſtones more cloſely than any other perſon, thinks that they are compoſed of the ſame matter as that ſhining coloured tartar which

* See vol. v. art. *Of the animals peculiar to the New Continent.*

adheres

adheres to the teeth of ruminating animals; and it appears, from the numerous collection of bezoars in the royal cabinet, that there are essential differences between the oriental and occidental bezoars. Hence the goats of the East Indies, and the gazelles of Persia, are not the only animals which produce the concretions called *bezoars*. The chamois *, and perhaps the wild goat of the Alps, the he-goats of Guiney †, and several American animals ‡, likewise produce bezoars: And, under this name, if

* In the country of the Grisons, balls as large, and sometimes larger, than a tennis-ball, are found in the stomach of the chamois goat. They are called *kemskougnel* by the Germans, who alledge that they are as useful as the bezoar, which likewise proceeds from the stomachs of certain Indian goats; *Travels to Italy, &c. by Jacob Spon and George Wheeler*. Near Munich, in a village called *Lagrem*, which is at the foot of the mountains, our host shewed us certain balls or brown masses, nearly of the size of a hen's egg, which were a kind of tender, imperfect bezoar, commonly found in the stomachs of the *roebucks*. He assured us, that these balls had great virtues, and that he often sold them to strangers at ten crowns a piece; *Voyage des Missionaires, tom.* i. *p.* 129.

† In Congo and Angola, when the wild goats begin to grow old, stones, resembling the bezoar, are found in their bellies. Those found in the males are supposed to be best; and the Negroes boast of them as specifics against many distempers, and particularly against the effects of poison; *Hist. Gen. des Voyages, par M. l'Abbé Prevost, tom.* v. *p.* 83.

‡ Accepimus a peritis venatoribus, reperiri lapides bezoard in ovibus illis Peruinis cornuum expertibus, quas *bicuinas* vocant; (sunt enim alia cornuta, *tarucæ* vocatæ, et alias quas dicunt *guanacas)* præterea in *teuhtlalmçame* quæ caprarum mediocrium paulove majori constant magnitudine. . . . Deinde in

if we comprehend all ſimilar concretions found in the inteſtines of animals, we may affirm, that moſt quadrupeds, except thoſe of the carnivorous kinds, and even the crocodiles and large ſerpents, produce bezoars *.

in quodam damarum genere quas *macatlchichiltic* aut *temamaçame* appellant. . . . Necnon in ibicibus quorum hic redundat copia, ut Hiſpanos et apud hanc regionem frequentes cervos taceam, in quibus quoque eſt lapidem, de quo præſens eſt inſtitutus ſermo, reperire: Capreas etiam cornuum expertes, quas audio paſſim reperiri apud Peruinos, et ut ſummatim dicam, vix eſt cervorum caprearumque genus ullum, in cujus ventriculo, aliave interna parte, ſua ſponte, ex ipſis alimoniæ excrementis, lapis hic, qui etiam in tauris vacciſque ſolet offendi, non paulatim concreſcat et generetur, multis ſenſim additis et cohæreſcentibus membranulis, quales ſunt cæparum. Ideo non niſi vetuſtiſſimis et ſenio pene confectis lapides hi reperiuntur; neque ubique, ſed certis ſtatiſque locis. . . . . Variis hos lapides reperies formis et coloribus; alios nempe candeſcentes, fuſcos alios, alios luteos, quoſdam cinereos nigroſque, et vitri aut obſidiani lapidis modo micantes. Hos ovi illos rotunda figura, et alios triangula, &c. *Nard. Ant. Recchi. apud Hernand. p.* 325 *et* 326.—In the ſtomach of a wild goat, called *cornera de terra* by the Spaniards, Wafer found thirteen bezoar ſtones of different figures, ſome of which reſembled coral. Though perfectly green when firſt expoſed to the air, they afterwards turned aſh-coloured; *Hiſt. Gen. des Voyages, par M. l'Abbé Prevoſt, tom.* xii. *p.* 638.—*Nota*, This *cornera de terra* is neither a goat nor gazelle, but the *lama* of Peru.

* There is another ſtone, called the *ſtone of the hooded ſerpent*, a ſpecies of ſerpent which has a kind of hood hanging behind its head . . . and, behind this hood, the ſtone is found, the ſmalleſt being as large as a hen's egg. . . . These ſerpents frequent the coaſts of Melinda, and the ſtones might be brought by the Portugueſe ſailors or ſoldiers, when they return from Moſambique; *Voyage de Tavernier, tom.* iv. *p.* 80.

To obtain a clear idea of theſe concretions, they muſt be diſtributed into ſeveral claſſes, referring to the animals which produce them, and the climates and food that are favourable to their production.

1. The ſtones formed in the bladder and kidneys of men and other animals, muſt be ſeparated from the claſs of bezoars, and denominated by the appellation of *calculi*, their ſubſtance being totally different from that of the bezoars. They are eaſily diſtinguiſhed by their weight, their urinous odour, and their ſtructure, which is neither regular, nor compoſed of thin concentric circles, like that of the bezoars.

2. The concretions ſometimes found in the gall-bladder and liver of men and animals ſhould not be regarded as bezoars. They may be diſtinguiſhed by their lightneſs, their colour, and their inflammability; beſides, they are not formed of concentric circles round a nucleus.

3. The balls frequently found in the ſtomachs of animals, and eſpecially of the ruminating kinds, are not true bezoars. Theſe balls, which are called *ægagropili*, are compoſed, internally, of hairs ſwallowed by the animal, when licking itſelf, or of hard roots which it was unable to digeſt; and, externally, moſt of them are covered with a viſcid ſubſtance, which has ſome reſemblance to bezoar. Hence the *ægagropili* have nothing in common with the bezoars but this external

 covering;

covering; and inſpection alone is ſufficient to diſtinguiſh the one from the other.

4. In temperate climates, we often find *ægagropili* in animals, but never bezoars. Our oxen and cows, the Alpine chamois *, and the Italian porcupine †, produce only *ægagropili*. The animals of hot countries, on the contrary, yield only bezoars. The elephant, the rhinoceros, the goats and gazelles of Aſia and Africa, the lama of Peru, &c. inſtead of *ægagropili*, produce ſolid bezoars, whoſe ſize and conſiſtence vary according to the animals and the climates under which they live.

5. The bezoars, to which ſo many virtues have been aſcribed, are the oriental kind, and they are produced by the goats, gazelles, and ſheep, that inhabit the high mountains of Aſia. Bezoars of an inferior quality, which are called *occidental*, proceed from the lamas and pacas which are found in the mountains of South America. In fine, the goats and gazelles of Africa likewiſe yield bezoars; but they are not ſo good as thoſe of Aſia.

From all theſe facts we may conclude, in general, that the bezoars are only a reſidue of vegetable nouriſhment, which exiſts not in carnivorous animals, and is peculiar to thoſe who

* See note, p. 439.

† We found an ægagropilus in a porcupine ſent us from Rome in the year 1763.

live upon plants; that, in the ſouthern mountains of Aſia, the herbs being ſtronger and more exalted than in any other region of the world, the bezoars, which are the reſidue of them, are alſo ſuperior in quality to all others; that, in America, where the heat is leſs intenſe, and the mountain herbs have not ſo much ſtrength, the bezoars which proceed from them are alſo greatly inferior; and, laſtly, that, in Europe, where the herbs are feeble, and in the plains of both continents, where they are groſs, no bezoars are produced, but only *ægagropili*, which contain nothing but hairs, roots, or filaments that are too hard to be digeſted.

END OF THE SIXTH VOLUME.

Plate CXCVII.

A. Bell Sculp.t

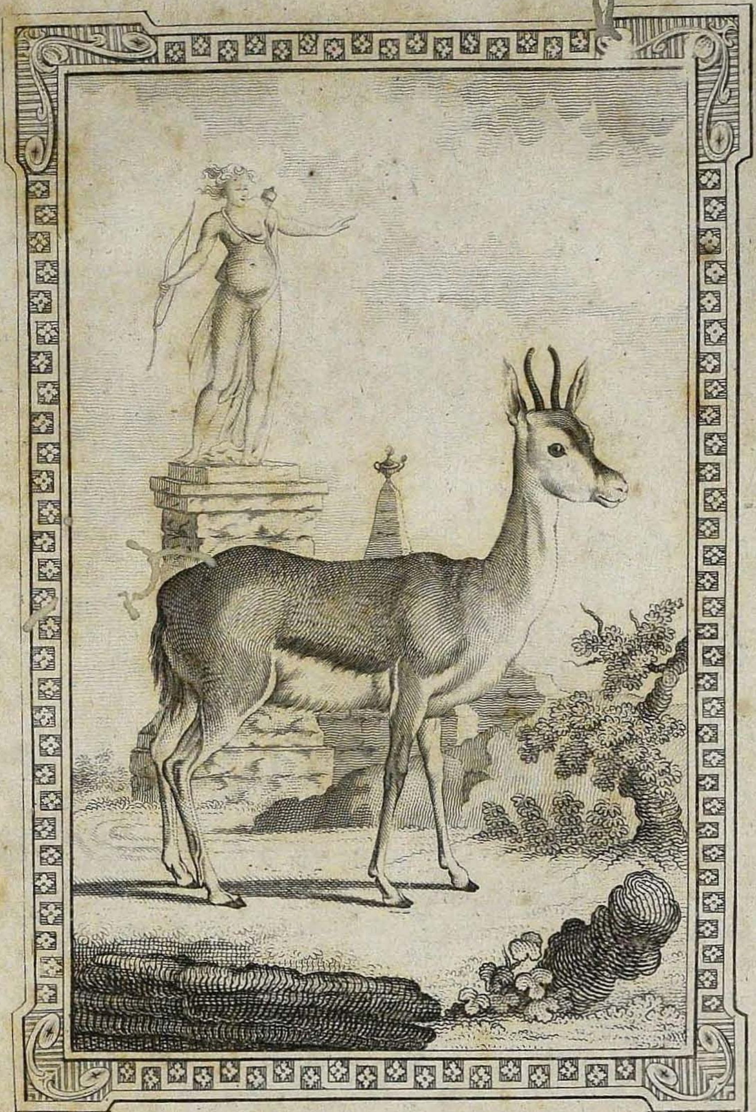
GAZELLE.

Plate CXCVIII.

A. Bell Sculpt.

KEVEL.

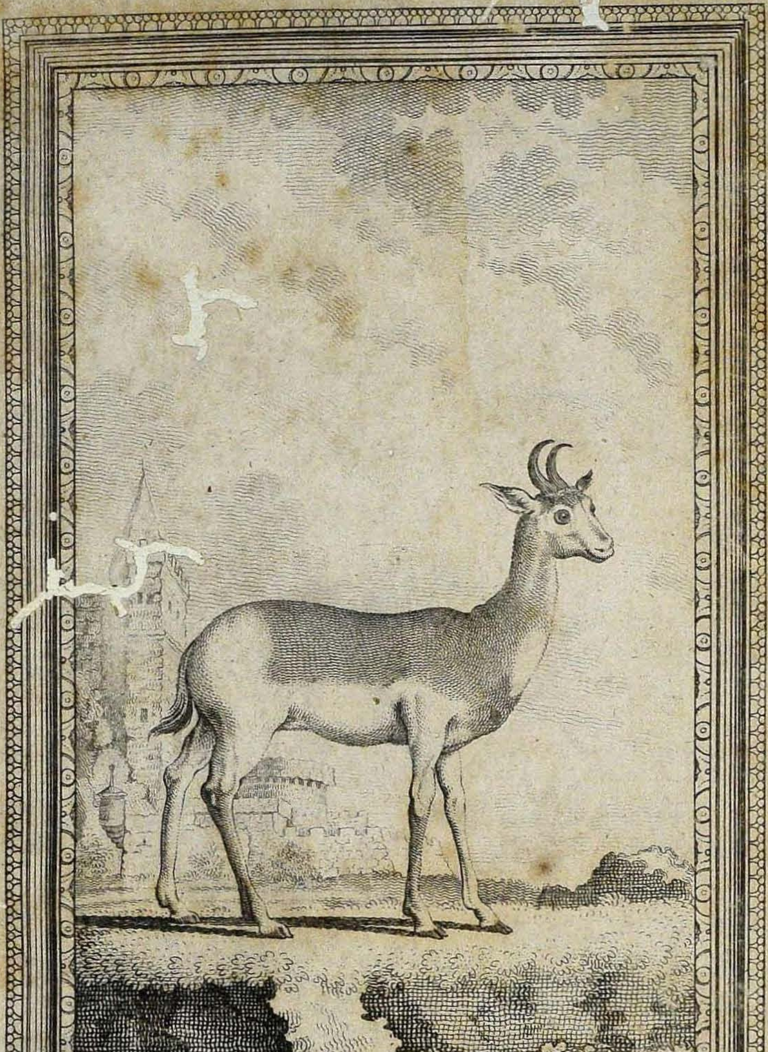
Plate CXCIX.



A Bell Sculp.t

CORINE.

Plate CC.



A. Bell Sculp.t

NANGUER